THE FORUM OF EDUCATION

A Journal of Enquiry and Research in the Psychology, Philosophy, and Method of Education.

Index to Vol. VII, 1929.

ISSUED BY THE TRAINING COLLEGE ASSOCIATION.
Publishers: LONGMANS, GREEN AND CO., LTD., LONDON.

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THE FORUM OF EDUCATION.

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The Forum of Education.

Vol. VII. No. 1. February, 1929.

An Analysis of Errors in English Composition.

By A. E. Chapman.

THE POSSIBILITY OF OBJECTIVE VALUATIONS IN COMPOSITION.

The teaching of English composition in secondary schools has been the subject of many experiments during the last few years. Teachers of English have introduced methods which have been devised to stimulate pupils to communicate their ideas as perfectly as possible.

The results which some teachers have obtained have been regarded by enthusiasts as overwhelming proof of the superiority of one or other of these new methods, while some results have been regarded by others as conclusive proof that the newer methods are less satisfactory than those they have supplanted.

In the face of such contrary opinions there are many who accept the traditional view that it is impossible to expect any objective standards in the valuation of English composition and that subjective estimates must necessarily vary between very wide limits. If this view has to be accepted then the problem of obtaining fair comparisons between the results obtained by different methods is almost, if not quite, insoluble.

The writer has carried out a small experiment annually for the last few years with a class of university graduates specializing in the teaching of English, and has obtained results which show how diverse are subjective estimates of the value of essays written by secondary school pupils.

Six or eight essays written by pupils of one of the two top forms of a secondary school were valued independently by the students. The valuations were tabulated by the lecturer, who based a discussion on the divergencies shown. A selection of typical tabulations is given in Table I.

TABLE I.

(Total marks possible : 20.)

Essay.	*Student*			
	a	*b*	*c*	*d*
A ..	15	9	10	18
B ..	7	11	8	11
C ..	9	7	9	10
D ..	11	10	12	14
E ..	16	14	11	12
F ..	10	12	12	16
G ..	12	9	10	11
H ..	14	15	11	12

From this table it will be seen that there is no uniformity of grading. Essay A is placed first by one student, sixth by another, and so also with Essay F.

In defending their valuations the students often gave interesting information as to the basis of their judgments. One marked Essay A highly because it contained two or three happy phrases and no serious grammatical mistakes ; another student gave the same essay low marks because it seemed to be " bookish."

Some students penalised mistakes in spelling severely ; others regarded them as trivial.

These results support the findings of other investigators on the valuation of compositions.*

It is no doubt true that a reliable valuation can be obtained by taking the collective judgments of a considerable number of markers ; this was the method adopted by Dr. Boyd to establish his standard scale, but this method is too laborious to be carried out at frequent intervals, and no individual teacher can ever be confident that his valuations of English essays will be in accord with a collective valuation. Hence no reliance could be based on the opinions of individuals as to the improvement or otherwise from year to year in the writing of English by school pupils.

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*See William Boyd : Measuring Devices in Composition, Spelling, and Arithmetic. Also Dr. Godfrey H. Thomson and Miss Bailes : The Reliability of Essay Marks. *Forum of Education*, June, 1926.

Even if collective valuations were obtained the grading would be of little value to teachers who wished to know the precise points in which improvement or deterioration had been discovered.

If, however, it is possible to analyse the errors made in a sufficiently representative collection of essays and to make this analysis at intervals according to the same scheme, then it should be possible not merely to state with confidence whether there has been general improvement or not, but to give objective evidence of the directions in which progress or retrogression has been made.

DATA AVAILABLE AND SCHEME ADOPTED.

The material for this analysis exists in the essays written by pupils taking the School Certificate examinations conducted by the various University Examinations Boards. This year the writer is indebted to the Secretary of the Northern Universities Joint Board for the opportunity to analyse in detail the errors in a collection of essays which he had previously examined for the Board.

A preliminary analysis of several hundreds of errors was made between spells of marking essays. This analysis convinced the writer that it would be advisable to ignore differences in knowledge of subject matter, aptness of quotations, power of imagination, cogency of reasoning, and to limit the analysis to errors in the writing of English.

In the main investigation the writer followed to a considerable extent the scheme used by Professor R. I. Johnson in his investigation of the commonest errors in social and business letters and in composition.*

Fifteen main headings were taken: Punctuation, sentence structure, spelling, use of capital letters, clarity, use of apostrophe, use of quotation marks, slang, grammatical errors in the use of verbs, grammatical errors in the use of pronouns, use of prepositions and conjunctions, carelessness, confusion between adjective and adverb, choice of vocabulary, and miscellaneous.

Two thousand errors were tabulated, and the summary is given in Table II. Explanations and examples of the various groups are given later.

*Summarized by Reed in "The Psychology of Elementary School Subjects."

TABLE II.

Rank.		*No. of Errors.*
1	Vocabulary	384
2	Spelling	317
3	Clarity	218
4	Prepositions and Conjunctions	168
5	Carelessness	161
6	Punctuation	141
7	Grammar (Pronouns)	114
8	Grammar (Verbs)	113
9	Sentence Structure	105
10	Slang	90
11	Apostrophe	66
12	Use of Capitals	40
13	Confusion of Adjective and Adverb	20
14	Quotation Marks	6
	Miscellaneous	57
	Average number of errors per essay, 11 3	2000

Table III classifies the numbers of mistakes made by the pupils.

TABLE III.

No. of Errors.	*No. of Essays.*
0	0
1	2
3	3
3	3
4	6
5	6
6	9
7	9
8	12
9	12
10	15
11	16
12	15
13	14
14	10
15	11
16	10
17	7
18	5
19	4
20 or over	8

Mean Number of Errors 11.0
σ 4.6
P.E. 3.3

ILLUSTRATIONS OF ERRORS.

It is unnecessary to illustrate in detail many of the kinds of errors tabulated in Table II, as teachers will be thoroughly familiar with them, but some of the classes containing a large number of errors invite further study.

The omission of quotation marks was rare, and the use of the adjectival form instead of the adverbial was not common.

The misuse of capital letters included the use of small letters for proper names as well as the use of capitals for common nouns. The latter error was the more common.

The misuse of the apostrophe was a more serious error ; most of the errors were omissions in possessives, though there were several instances of the misplacing of the apostrophe in both singular and plural possessives ; other omissions or misuses of the apostrophe were rare, only five instances being noted in the errors tabulated.

The comparatively small number of errors classified as slang is due to the fact that in many instances the error could have been classified either under the heading " poor vocabulary " or under that of slang. Under the heading " slang " were included phrases rather than isolated words ; " up to him to," "having a scrap," "remembered as a star poet," " went for him " (attacked), " the last word in ugliness," " Cæsar was done in," are examples of the errors classified as slang.

The writer noticed that the use of slang was much more prevalent in the essays from some schools than in those from others.

Errors in sentence structure were numerous. They included incomplete sentences, failure to write a new sentence for a new idea, and awkward constructions. " Because I believe a genius is born yet I feel that beauty has a great effect on the geniuses and on those who . . . " and " If a man has a cheery home and cheery inmates " are examples of the third kind.

Grammatical errors in the use of verbs included non-agreement in number with the subject, unwarranted change of tense in a complex sentence, unrelated participles, and wrong mood. Of these the first two were the most numerous, though unrelated participles were common ; " Walking down the nave the altar has three steps," in addition to illustrating the error contains an amusing ambiguity.

The misuse of pronouns included non-agreement of pronoun with its antecedent, the impersonal use of " you " and miscellaneous errors in the use of pronouns. Illustrations are perhaps unnecessary, though the writer cannot resist quoting one example : " As one looks up their eyes are inspired by the stones."

Errors in punctuation were classified as omission or misuse of the period, omission or misuse of the comma, and other errors in punctuation. The standard taken in the use of the comma was that independent clauses and phrases should be marked off by commas and that independent members in a series should similarly be

separated. A few pupils scattered commas indiscriminately over their pages, separating subjects from predicates and completion of predicate from the verb by the insertion of commas : " The birds, nest on bare cliffs," and " The robin eats, the crumbs."

It would have been possible to have doubled the errors in punctuation tabulated if one had counted all mistakes in the choice of stop used ; actually only serious misuses of colon or semi-colon were counted.

Carelessness accounted for eight per cent. of the total errors. In a sense many of the errors tabulated under the other headings could have been attributed to carelessness, but the heading was restricted to errors involving merely the omission or repetition of letters or words, omission or repetition which on a careful reading through of the essay should have been detected ; e.g., " wanteded."

Misuse of prepositions and conjunctions accounted for one sixth of the total errors. The errors included superfluous prepositions or conjunctions, omissions, the use of the wrong preposition or conjunction, and as a separate heading the misuse of " like."

" Keep reading at it," " the book ends up," " an example for beauty," " wait in his expectation," " the cause was because," " on between the aisles," " prefer this than that," " save oneself of the expenditure," " however " (moreover), " that " (because), " different to," " thus " (and), " explain from " (by), are examples of these errors, which were fairly evenly distributed in the essays.

Errors under the heading " clarity " were numerous. They included ambiguous pronominal reference, ambiguous phrasing, and miscellaneous confusions in sentence structure. Examples are : " The robin is a small bird and will come for crumbs if put on a wall," " Another thing is the collection of bibles and prayer books. These are, I think, only copies, but they are lucky enough to be the owners of . . . ," " Many of the visitors to these churches are Americans. They are very old and interesting." " A warship has always to be in dock being repaired," " An aeroplane over water in distress," " When the organ is played it fills the church," " If one waits the bird in its peculiar stages will complete the scene."

It was interesting to note that the essays from some schools contained few errors of this kind, while those from other schools contained many examples. The writer from his experience with students in training believes that some teachers read essays uncritically, giving the pupils credit for the intention to express a particular thought instead of demanding clear unambiguous writing. Teachers with whom this point has been discussed have brought

forward the difficulty of securing fluency as well as clarity. There is no doubt a difference of opinion as to the better policy to be adopted ; at the earlier stages of teaching composition some prefer to stress fluency, others, clarity. This difference is shown in the essays investigated not merely in the number of errors included under the heading " lack of clarity," but also in those included under " choice of vocabulary."

In the choice of vocabulary other factors no doubt entered largely—amount and kind of reading by the pupils and retentiveness may be mentioned—but the number of errors classified under this heading suggests that the attitude typified by " anything will do " is more prevalent than is desirable. Examples include : " The house set fire," " They throw snowballs which secrete stones," " The lark will ascend to the lower regions," " These birds should be extinguished," " Where the recent excavations are now placed," " He had been usurped by his wicked brother," " A visit to . . . is one of the most instructive places to visit," " Eppie's real father happened to be the squire's son," "The bird is an odious customer to other birds," " The thrush, blackbird, and starling are the most frequent of domestic birds," " Every man practically loves . . . ," " Oliver Twist is a kind of book," " The author did not lose the respect due to his book. This is easily found in the recent controversy over the original manuscript which is now in America," " It learns us," " There are many who mutilate gas and electricity by revealing them in their stark bitterness," together with such phrases as " frightfully good," " infinitely," " sweet birds," " lovely," dreadfully funny," " practically," " most " (some).

Many more examples might be given, but no useful purpose would be served by so doing in this essay. An interesting investigation would be that of recording instances of similar misuses with accounts of how the pupils were led to make use of the particular words or phrases at the time.

Spelling errors were very unevenly distributed, both in respect of the schools from which the essays came and in respect of individual pupils.

A point of method in counting errors should be mentioned here. Repetitions of the same mis-spelling by one pupil were not counted except in the common words : their, there, here, hear, his, is, where, were. Errors in the spelling of these words were rare.

No attempt was made to classify the spelling errors, which included duplication of consonants, of which "comming," "waitting,"

"holliness," and "plummage" are examples, and many errors in the terminations *er, or, ur,* and *ar* of common words.

In general the misspellings rarely left the reader in doubt as to the word meant, as they were often based on the spelling of words of similar sound, or gave almost correct auditory representations of the word if pronounced as spelled. Some pupils appeared to have very poor visual memory or to have received little training in observing the visual appearances of words.

In view of the criticism on the spelling of pupils leaving schools it should be noted that in very few cases did the pupils use words which were not likely to be used in ordinary writing. On the other hand it must be noted that many pupils made no spelling mistakes.

COMPARISON BETWEEN ERRORS MADE BY BOYS AND GIRLS.

A comparison may be made between the errors made by boys and those by girls, as the 2,000 errors were classified in the two groups. The classification is given in Table IV.

TABLE IV.

Error.	*Total for Girls.*	*Total for Boys.*	*Rank Girls.*	*Rank Boys.*
Vocabulary	214	170	1	1
Spelling	185	132	2	2
Clarity	136	82	3	3
Preposition and Conjunction	110	58	4	5
Carelessness	102	59	5	4
Punctuation	94	47	6	6
Grammar (Pronouns)	76	38	7	8
Grammar (Verbs)	66	47	8	6
Sentence Structure	64	41	9	9
Slang	56	34	10	10
Apostrophe	33	33	12	11
Capitals	35	5	11	13
Adjective and Adverb	14	6	13	12
Quotation Marks	3	3	14	14
Miscellaneous	30	27		
	1218	782		
Number of Essays	117	60		
Average number of Errors	10	13		

These figures support the view that girls at secondary schools use English more correctly than boys. The relative frequency of each type of error in the two groups is very similar and with the exception of the misuse of capitals the differences do not appear to be significant. Some girls frequently used capital letters for common nouns whereas very few instances of this error were found in the boys' essays.

COMPARISON OF RESULTS WITH THOSE OF AMERICAN ENQUIRY.

Finally, the relative frequency of these errors may be compared with that found by Professor Johnson in the investigation previously referred to. The comparison is best given in tabular form.

TABLE V.*

Type of Error.	*Rank in Professor Johnson's Investigations.*			*Rank in this Investigation.*
	Social letters.	*Business letters.*	*Compositions.*	*Compositions.*
Punctuation	1	1	2	5
Sentence Structure ..	2	3	4	8
Spelling	3	4	1	1
Adjective and Adverb	4	10	9	11
Capitals	5	2	5	10
Clarity	6	7	11	2
Apostrophe.....	7	6	6	9
Carelessness	8	8	3	4
Verbs	9	5	8	7
Prep. and Conj.	10	9	10	3
Pronouns	11	12	7	6
Quotation Marks	12	11	12	12

In viewing the results of the two investigations it should be noted that the American enquiry in composition dealt with the essays of high school freshmen and first year university students, while the present investigation was concerned with the essays of pupils taking the School Certificate Examination.

If objective valuations are to be made in such a way that comparisons may be possible between the results obtained by the use of different methods of teaching composition it is important that essays of the same length should be analysed or the errors calculated as percentages of the number of words written.

In this investigation the essays investigated averaged about 600 words each in length and the limits of variation were small.

It is hoped at a later date to give an analysis of the errors made by senior pupils and by university students as well as an analysis of errors made by other candidates for the School Certificate.

*This table includes only items common to the various investigations, so that though the ranks do not correspond with the original data, they give the comparative ranks for the common items.

SOME PRACTICAL CONCLUSIONS.

A few suggestions on methods of reducing the number of the more common errors are added.

These common errors may from this point of view be divided into three groups ; those due to the imperfect acquirement of good language habits, those due to inadequate writing vocabulary, and those due to the failure of pupils to adopt a critical attitude towards their own efforts.

The first group will include grammatical and spelling errors Their reduction depends on practice of such a kind that good habits in the use of words may be established. Probably most pupils write too much, and would do more effective work if fewer answers in essay form were demanded from them in the various subjects of the curriculum. If teachers of history, geography, and science cannot be expected to correct every error in English made by pupils in answers to their questions, more questions demanding single word answers should be set, and teachers of these subjects could test knowledge without laying themselves open to the charge of encouraging pupils in the use of bad English. If a self-denying ordinance were established in schools that teachers should not set questions demanding answers in essay form unless they were prepared to correct them carefully, both from the point of view of subject matter and from that of correctness of English, the writer believes that the reduction in the amount of written work and the realization by the pupils that every teacher demanded correct English would result in a marked improvement in the use of English and the more rapid establishment of good language habits. Too little written work is a less serious fault than too much, for if little is written there are fewer chances for the making of errors, and in the early stages of the formation of habits the most important principle is the negative one of not permitting exceptions. If in addition English specialists keep other teachers informed of the points to which they are directing special attention with the different classes there is more opportunity for effective co-operation.

With regard to the second group of errors little need be said. Every teacher knows that extensive reading gives the raw material for a good writing vocabulary. But, unless special training is given in searching for the right word, the raw material will not be assimilated and will not become part of the writing vocabulary of the pupils.

The third point is fundamental. Unless pupils are stimulated and encouraged to ask themselves habitually such questions as :

" In what other ways can I say this ? " and " Which of these ways is the best ? " they are not even apprentices to the craft of writing. Teachers of English welcome the appearance in their classes of the artist in words, but most of their pupils are not artists, and most of their efforts must necessarily be directed to the training of those whose special gifts and interests lie elsewhere, but who can be expected to become efficient craftsmen in the use of the mother tongue.

The paucity of experimental sentences on the left-hand pages of the examination books, the almost complete absence of alterations in the essays, and the large number of errors in clarity in the essays analysed, suggest that there is room for further work in devising and putting into practice special methods directed towards the establishment of the critical and selective attitude in the minds of the pupils.

In conclusion the writer wishes to emphasize the point that pupils in the middle school are more likely to make progress if each essay is marked in such a way that comparison can be made in definite ways with other essays by the same pupil. If a simple system of analysis of errors is used together with a code it is an easy matter for pupils to keep a record. A suggestion, made by the writer to a fifth form boy, that he should put a summary of these errors at the head of a new essay, elicited the response " It would make me very careful not to make as many next time."

Any system which would enable the pupils to have a definite idea of the points on which to concentrate would be effective and its adoption would have the added merit of giving many pupils the stimulus which comes from improved achievement.

Information as to which points are most effectively dealt with at each stage of the school course and the methods most effective at each stage is still to be obtained.

The writer is proposing to obtain records of the frequency of different types of error at various stages in the school course, together with brief statements of the methods used in teaching composition at these stages. He will welcome comments on the results of the present investigation, suggestions as to how the analysis can be made more valuable, and offers to co-operate in the wider investigation. It is hoped that the results will enable teachers to estimate the relative efficiency of different methods of teaching English pupils to write English.

Drawing Out and Putting In: or The Importance of Ideas.

By Helen Wodehouse.

I.

"If once, then, a child of eleven years has had his relative amount of G measured in a really accurate manner, the hope of teachers and parents that he will ever rise to a much higher standing . . . would seem to be illusory." (Spearman: "The Abilities of Man," p. 367.)

The statement may prove to be too rigid. Professor Spearman himself makes allowance for pathological cases, and Professor Burt and some other authorities allow more variation still. Perhaps the doctrine of the fixity of G will provide a psychological battlefield no less important than that formed in biology by the somewhat similar doctrine of the non-inheritance of acquired characteristics. But it seems clear that as in the latter case we who are not biologists must leave it mainly to biologists to work at the question, and, meanwhile, must not let ourselves assume that acquired characteristics can come to be inherited, so in the former case we have to leave it mainly to those who are not merely psychologists, but mathematicians; and, meanwhile, it appears, we must not let ourselves assume that education can alter G. Similarly, I suppose, we must deny ourselves as regards any special capacities which may be found to exist in addition to G. In so far as these consist of inborn powers or energies, we must not assume that education can increase them. Education can impart knowledge, can teach methods and attitudes, can kindle desires, and inspire hopes and ideals. We must proceed for the present on the basis that perhaps it can never achieve anything else.

Now this looks as though we were cutting away some foundation from under the favourite statement of our first-term students. The "old" education, they tell us, wrongly supposed that its business was first to subdue the child and then to put things into him, whereas the new recognizes that it must draw out and develop the child himself. The first contrast, of drawing-out as against subduing, may indeed be left with them to help form their faith.* But what

*One may note, in passing, the odd way in which some writers, whole-hearted in this contrast as regards the upbringing of children, will still assert that man's business is to "master" his environment and "subdue" Nature, and "battle with" the world. Have we done no more than "subdue" when the prairies have blossomed, and the marsh has become a river, and the lost vibrations have become music?

of the second contrast, of drawing-out as against putting-in? Drawing-out and developing seem to lose a good deal of their meaning if we assume that I.Q. cannot be increased, and that M.A., independent of our encouragement, will go on increasing to its fore-ordained stopping-point. In fact, the whole idea of schooling as drawing-out, which began as the doctrine of humane reformers, seems suddenly to have turned to inhumanity in places where critics hear of intelligence tests* and proclaim that these should be used to clear the schools of the " dull and useless " children from whom there is nothing to be drawn. Does it look as though we should have to turn for a while to putting-in again? If we may still assume that the right education can impart knowledge, can teach methods and attitudes, and inspire hopes and ideals, then, perhaps, it should still be at hand, even for the dull boys of fourteen.

Evidently neither metaphor is workable alone, as we always hoped our students would realize before they went down. We cannot impart unless the mind can take hold, or inspire unless it can be moved to breathe ; or kindle if no inflammable material is there ; or implant unless the plant can take root in the soil, and the soil express itself in turn in the plant's growth. We have learnt by experience that we cannot put in by force (" . . . The children lose with extraordinary rapidity, after leaving school, the knowledge which has been so laboriously imparted. . . ."),† and we ought to have learnt that we canot draw out by force, whatever it is that we hope to draw. (" Translation and mathematics are invaluable because they call for patience and thoroughness and accuracy and hard thinking." Will these come when you do call for them?) Our profession is not that of the warehouseman, whether packing or unpacking, but at the very least that of the gardener, who may not make the mind grow but who does cause something to grow in the mind. The mutual grip of plant and soil is the basis of everything ; the emphasis may alternate from one to the other. If we have laid too exclusive stress lately upon the soil, and if our one-sidedness has recoiled on what we care for, then perhaps for a time we should add some more stress on the things that are planted.

II.

Let us take a very simple example of education in the concrete. Dr. Kohler kindles desires in his chimpanzees by hanging bananas from the roof, or by placing them just out of reach outside the

*E.g., the writer of a newspaper article quoted in *The Highway*, February, 1922.
†Report of the Cross Commission on " Payment by Results," 1888.

cage. He graduates the difficulties with great care, and he scatters the seed of ideas, in the shape of boxes that might be piled and climbed on, or sticks that might be used as hooks or levers. Success varies, but surprisingly often his patience does come to fruit, and first one of the pupils and then another does get a new idea, and, one more and another less, can adapt it later to the conditions of a rather different puzzle. The naturally intelligent among them continue to surpass the less intelligent as before. We are assuming that no difference has been made to that natural intelligence; that no chimpanzee has had added to him any more of the sense he was born with. Yet he has become an abler creature than he was. In this department his mind has become more fertile in resource and invention; though by hypothesis we have added nothing to that innate fertility to which in some other department we might still apply some standard test.

To enlarge the description—education is still one of the means for doing everything that can be done. If we cannot alter the mind, we can still help thoughts to grow there. We cannot alter the eye, but we can equip it to see things great and small, which else would remain unseen. We cannot alter the hand, but we can place it on the levers of its world. If we are asked whether our business is to teach truth or to teach children (the questioner usually intending the latter) our answer can only be, both, and for the sake of both, and neither can profit unless both do. The child and the idea must both gain a larger world to live in.

III.

From all this, various reflections may follow.

In the first place, the controversial question of the age at which mental growth ceases will have no relevance to the question of the school-leaving age. The statements "Education is useless unless it develops intelligence," and "Intelligence in the average person does not develop after 14 or 16,"—these statements belong to different strata in our history, and their words have different meanings.* Professor Spearman has expressed the matter well, in saying that the American Army test results, interpreted in their utmost stretch, "would only indicate that educable capacity ceases at an astonishingly early age to grow any larger. It would not in the least suggest that this capacity then or thereafter grows smaller.†

*Of those who think that they bear upon each other, perhaps no one has thought it out seriously, since no one has asked for the closing of universities where all the students are over eighteen.

†*Journal of Adult Education*, September, 1927, p. 13.

Again, let us follow up our other metaphors. "Knowledge is to intelligence," says an American writer, "as the raw material is to the machine." But if we are to speak in terms of engineering, we should remember also an older description, "Knowledge is power."* A true and far-reaching idea, so far as truly acquired, may give to the poorest mind that remains in contact with it a command which the greatest mind could not possess alone. It supplements the natural strength of our intelligence as the power-shop supplements our strength of muscle; as spectacles and telescopes and microscopes may supplement our eyes; as our natural ears may come to hear speech from the other side of the world.

Let us begin almost at random by considering the power of the ideas embodied in notation. "It is strange to us to think of an ancient astronomer compiling a calendar, and placing correctly the various eclipses of the sun and moon, and yet for simple subtraction or multiplication, turning to his box of pebbles. . . . The possession of our marvellous system of notation renders it impossible for us to put ourselves in the place of the workers who never knew it." In the Egyptian symbols, "the picture of a bird represented 100,000, and 1,000,000 was represented by a man holding up his hands in astonishment." "The Hindus considered that while all other discoveries might be due to human ingenuity, there were two which were divinely taught: the invention of letters, and of nine figures and a cipher, with device of places. . . ."†

Consider that previous divine invention, the letters of the alphabet, which embody, I suppose, the revolutionary idea of recording the elements of sound instead of the elements of meaning. The Chinese system, I understand, has continued mainly with the latter plan, and a report on Adult Education in China describes the highest achievement reached in national communication:

> "A unique set of text-books has been edited and published by Mr. T. E. Tong . . . —unique by the fact that only six hundred characters are used. These characters are the most common ones, and adequate for the expression of ordinary

*"Two very able young American physiologists told me in 1919 that they had failed in discussion to agree on a definition of education, and asked my help. I defined education in some such words as 'a process by which human beings so acquire the knowledge and habits which constitute civilization as to be fitted to live well. . . .' One of them replied, 'That was what we wanted; we thought of education as a development of the personality and so on, but we did not manage to think of it as a process of learning things.'" (Graham Wallas: "Our Social Heritage," p. 52.)

†S. Cunnington: "The Story of Arithmetic."

ideas. . . . By using the same six hundred characters, Mr. Tong has also published books on current events, the nursery, . . . and agricultural subjects, and a monthly magazine. . . . Thus, by acquiring a knowledge of these six hundred characters one can read and write and learn common subjects."*

If we were adult illiterate Chinese, how many of us would get so far?

But we may illustrate from something more elementary than reading and writing. How many of us could, not do simple arithmetic, but see any difference between seventeen and eighteen, unless we had *words*? How much of an Englishman's power of thought does he owe to his inheritance of the English language?

Further, to these very general tools which have become hands and feet to us, add all those great possessions which we call fruitful ideas. How much understanding could the best intelligence muster in the realm of physics without the idea of gravitation, or that of an electric field? in mathematics, without negative quantities, or infinity? in economics, without "average," and "margin"? in biology, without the general idea of evolution? in psychology, without dispositions and sentiments, and now complexes and repressions—both pairs introduced within my own memory. These, in the valuable old metaphor, are apperception-masses, which work in and with the mind and as part of the mind; which take hold of new presentations and from that marriage develop new thoughts.

Different writers express the matter in different ways. Professor Bagley distinguishes the "horizontal growth" of our intelligence, which education and experience affect in the way I have described, from the "vertical growth," which perhaps we cannot affect. Darwin and Lincoln, he says, "could do a type of thinking at fifty that they could not do at twenty-one. I contend that the growth in the intervening years was real intellectual growth, and if it be objected that it is not growth in 'general intelligence' I answer that it . . . represented something vastly more important than general intelligence." Dr. Ballard, quoting this passage, remarks that "if Professor Bagley were suddenly translated to the planet Mars he would find that his vertical intelligence was of far greater use to him than his horizontal would be."† I wonder how Dr. Ballard can be so sure of this. Suppose

*Bulletin No. 8 of the World Assocation for Adult Education, May, 1921.
†Ballard: "The New Examiner," p. 118.

that we have to appoint a colonist for Mars, and have two candidates before us. One has a vertical intelligence of rather less height than Professor Bagley's, but he knows the ordinary things that most of us know, including in the most general sense the way to behave. The other's natural ability is guaranteed to be rather more, but a peculiar upbringing has kept his mind quite free of all natural science (including the knowledge that stones fall and that fire burns), of all arts and crafts (including any idea of the possibility of using tools), and of all humanities (including any idea of the possibility of language or notation, and also including any experience of dealing with other living beings). Can Dr. Ballard really be quite confident in recommending the rejection of No. 1 and the appointment of No. 2?

In every concrete instance, in fact, and surely even on the remotest star, power lies not with natural intelligence alone, but with that intelligence equipped and provided. Original thought comes not from the naked mind dealing with the bare material of sense, but rather from a set of thoughts which are brought into closest contact with another set. The student of a subject may examine A "with B in mind." In some department I may deliberately acquire the system of thought of some inspiring thinker, and bring it into contact with somebody else's new book, or with the perception (not sensation) of some new object; then sometimes a spark comes out. When I cannot keep up the flow of thought, some contact has broken. The apperception-mass has contracted away from my perception-point—it cannot find enough firmness in me to maintain itself in position. Or, in another way of picturing, my grasp upon the apperception-mass has slipped; or I have drifted, so that it is no longer contained in my mind. I am no use here unless my mind can serve as the meeting-place for the ideas; just as they also must come to nothing unless they can find a mind in which they may meet. And the finest mind can have no finer use, even in an office where inborn quality will have subtler demands made on it than in colonizing Mars. A series of sounds is heard; there is sense-material presented to native ability in the abstract. In the concrete, the nightingale sings to Palestine and Fairyland, and to love and home-sickness down the ages, through a young man's mind in which they and the beauty of English words have all found room to come together.

When such a singer passes, leaving great verse unto a little clan, there must be room also in the inheritors' minds if the verse is not to die with its maker. To return to the gardener's metaphor:

Ideas must have access to beds of very fertile soil, in which they may grow tall and blossom freely and cross-fertilize, but they must also be sown in many different soils, and cross-fertilize from one to another of these. We must have " the diffused education, without which the ideas of men of genius cannot fructify beyond the limited scope of an individual."* We are urged often to concentrate on selected adolescents or adults, minds that are " really worth cultivating," and, of course, to some extent we shall always do this ; but how much labour will be wasted if the minds which surround them are abandoned to barrenness or weeds.

Dr. James Ward many years ago left us some words appropriate to our new prospect, and useful whether we are thinking of drawing-out or of putting-in :

> " We hear much of the solidarity of modern civilisation. It means for one thing that progress is only possible when the intelligence of those capable of ruling thousands is seconded by the intelligence of others, in adequate numbers, capable of ruling hundreds, of ruling fifties, of ruling tens. Collectively these lesser lights have been as important and as indispensable, though their names are known to few, as the brilliant few whose dazzling achievements history has enshrined. In legislation and administration, in science, in industry and in commerce, national success depends on this orderly and continuous organization of intelligence from the highest positions down to the lowest. A wise statesman has no chance if the electors are mostly fools. Local government is impossible where there are no village Hampdens. Industrial development must halt at the line where the hands that work have not heads of their own to guide them. Even the pace of science is limited by the number of its students capable of observing and recording new facts. A nation . . . devoid of this organized intelligence is so far unformed and lifeless."†

In fact, as another distinguished writer has said in words that come back to one again and again, " It is impossible to exaggerate the co-operativeness of life." It is true for intellect and for character alike. Suppose we assume that W, the persistence of motives, is a quality innate and as fixed as G, then education in school and in life must consist in the provision of motives : the implanting, and causing to take root and grow, of value-ideas, standards and

*Professor Dewar on " Chemical Industries," quoted by James Ward, in " Psychology Applied to Education," p. 167.

†" Psychology Applied to Education," p. 168.

purposes, desires and ideals. And this will be no solitary task in a hedged-in ground. " Mazzini gave Italy an army of heroes : but their valour was not at first an intrinsic quality of themselves. It was a quality of their leader, and became theirs through their knowledge of him. With another leader it might well have remained not alone latent, but non-existent. Much of the hope of democracy lies in the fact that no set of psychological tests can ever tell what any man or body of men is capable of."* And the new seed surely is carried back to the original bed. Mazzini became a different man because an army followed him.

IV.

A final subject for reflection, very relevant to schooling, may serve to draw the rest together. We may approach it through a passage in a student's essay :

> " I have always thought that one of the most depressing discoveries of psychology is that every adult has a fixed mental age. However ambitious a man may be, however diligently he may seek truth, if he is born with only medium intelligence, his mind will always remain unable to grasp things beyond a certain complexity."

Now it is impossible to exaggerate the co-operativeness of life even within one man, and one might qualify this at once by quoting more experienced writers ; Miss V. Hazlitt, for instance :

> " Very great harm may be done by over-emphasizing the importance of high general intelligence. There can be no doubt that any one who is not seriously below the average in intelligence may do very useful and even original work in subjects to which he is devoted, while the possessor of much higher intelligence, lacking such devotion, may achieve little."†

Or Professor Thorndike :

> " It is probably unwise to spend much time in attempts to separate off sharply certain qualities of man, as his intelligence, from such emotional and vocational qualities as his interest in mental activity, carefulness, determination to respond effectively, persistence in his efforts to do so ; or from his amount of knowledge ; or from his moral and æsthetic tastes. Even so apparently remote a trait as muscular strength may

*W. E. Hocking : " Human Nature and its Re-making," 2nd ed., p. 409.
†" Ability," p. 85.

in some cases co-operate almost indistinguishably in the production of what we would call intellectual products. Thus a great scholar's achievements may be in part due to eye muscles which help to make reading a pastime."*

But for argument's sake let us grant the extreme position as the student writer sees it ; the fixed hierarchy of natural intelligences confronting a hierarchy of " things." Are we to agree that the lower ranks of the former are shut for ever from grasping the higher complexities of the latter ? In some abstract last resort perhaps yes ; but in the concrete, when we try to mark out the supposed ranks of complexities, are we not confronted with a continual motion and development in the ranks of the ideas ? a growth not merely upward, but downward and outward ?

" A child of this I.Q.," says the investigator, " will never be capable of fifth-grade or sixth-standard work." But what is fifth-grade work ? Elementary arithmetic was part of advanced education before Arabic notation came in ; now we begin it in Standard I. A tree that grew tall in the East has dipped a bough which has struck new roots in the West. What of the higher parts ? A mathematician, speaking on his subject in 1889, said, " The whole science suffers from want of avenues of approach, and many beautiful branches of mathematics are regarded as difficult and technical merely because they are not easily accessible."† In the forty years since then, this should have changed. Mathematics is particularly fertile in illustration, but everywhere the same thing is true. A constant process goes on of subsuming, condensing, simplifying, or expanding, interpreting one idea by another, making approaches. " A concept cannot stand still." The hierarchy of ideas is set at nought by the branching and growing downward. Many a branch may still terminate too high for a mind of given altitude, but a very brief extension may bring it within reach, and then that mind may climb. If we say this of mathematics, shall we omit to say it of the sciences, and the crafts, and the humanities, and patriotism, and religion, and the whole of life ? As men reach up to truth and beauty, these reach down to them. Ideas, at any rate, do not cease developing at sixteen years old ; and immortal thought, carrying its own life further, lends that life for a few years to mortal man.

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*Quoted by Bode in " Modern Educational Theories," pp. 318-19.
†Dr. Glaisher, quoted by Ward, op. cit., p. 107.

Some Effects of Age in Selective Examinations.

By Frank Sandon.

PART II.

V.—The Educational Age of the Candidates.

In Part I of this paper an enquiry was made into the relationship between the age and mark obtained by boys in the annual Free Place (Entrance Scholarship) Examination to a mixed maintained secondary school. It has already been pointed out that the examination questions could not be regarded as of the nature of intelligence tests. For this reason alone the results of the examination cannot be used directly to compare the intelligences (measured as I.Q.) of the various candidates. But there is yet another reason. In an intelligence test, the questions and the schedule of marking are virtually framed to give practically a normal distribution of the marks of all the children of any age group. We have, however, nothing like a normal distribution of all the 500 boys of any of our two-month age groups. In each case we have, as can be seen from Table I, a fairly complete frequency curve of marks for what are presumably* the best 121, the best 111, the best 98, and so on, of the various age groups. This actual frequency curve is not by any means normal, but at the extreme end (of high marks) it cannot be distinguished from one, and our assumption* that it is composed of the best candidates of the age group is probably safer here than over the whole of the actual distribution.

The tail this end of the actual curve might well pass for the tail of a normal curve ; the tails for higher marks in the two ogive curves (accumulated frequency curves) are very similar, as will be seen on plotting the two curves. For one, plot theoretical deviate and proportionate accumulated frequency (i.e., rank, see Table IIa), and for the other actual deviate (given by mark), and proportionate accumulated frequency (given again by rank) ; the soundness of the assumption is illustrated by the fact that for the first six or ten boys of each age group the graph between actual mark and theoretical deviate, for various ranks, is roughly a straight line. Take, for example, the age group 11.10 –. We assume that there are 500 boys composing this ; 121 of these took the examination. A very few of the brightest were chosen in the previous year, when they were aged 10.10 – . Of the rest, we may assume* that, for the first 50, almost

*See Appendix.

TABLE I.

SECONDARY SCHOLARSHIPS (BOYS), 1926.

FREQUENCY TABLE—TOTAL MARKS IN FINAL EXAMINATION AND AGE.

TOTAL MARKS IN EXAMINATION.	*Age on 1926-8-1*	10.0 –	10.2 –	10.4 –	10.6 –	10.8 –	10.10 –	11.0 –	11.2 –	11. – 4	11.6 –	11.8 –	11.10 –	*Total.*
	180 –	—	—	—	—	—	—	—	—	—	1	—	2	3
	160 –	—	1	—	—	1	2	2	1	5	3	5	7	27
	140 –	—	1	2	1	3	5	4	7	18	9	18	11	79
	120 –	1	3	6	5	6	7	11	12	4	20	15	31	121
	100 –	1	5	6	9	9	7	9	10	14	27	17	20	134
	80 –	5	7	12	12	15	13	22	9	24	18	24	18	179
	60 –	1	7	6	22	8	11	11	23	19	15	19	20	162
	40 –	1	1	4	7	7	10	9	13	7	4	10	8	81
	20 –	—	—	1	2	2	5	2	4	2	1	3	2	24
	0 –	—	—	1	—	1	1	—	—	—	—	—	2	5
	Total Frequency	9	25	38	58	52	61	70	79	93	98	111	121	815

TABLE IIA.

	Rank / 500	*Deviate** (×σ)		*Rank* / 500	*Deviate** (×σ)
Rank 1.....	.002	2.878	Rate 11.....	.022	2.014
,, 2.....	.004	2.652	,, 12.....	.024	1.997
,, 3.....	.006	2.512	,, 13.....	.026	1.943
,, 4.....	.008	2.409	,, 14.....	.028	1.911
,, 5.....	.010	2.326	,, 15.....	.030	1.881
,, 6.....	.012	2.257	,, 20.....	.040	1.751
,, 7.....	.014	2.197	,, 30.....	.060	1.555
,, 8.....	.016	2.144	,, 45.....	.090	1.341
,, 9.....	.018	2.097	,, 60.....	.120	1.175
,, 10.....	.020	2.054			

*From "Tables for Statisticians and Biometricians."

certainly for the first 10, of the ranked candidates, they are the 50 (or 10) best of those eligible. We have, then, the following table as illustration :

Marks of Age Group in Order of Rank*.....	190	180	176	173	171	169	167
Corresponding Rank	1	2	3	4	5	6	7
Such a rank is .... of way along 500 ranked boys..	.002	.004	.006	.008	.010	.012	.014
In Normal Curve such an accumulated frequency corresponds to a deviate of	2.878	2.652	2.512	2.409	2.326	2.257	2.197

*See Table II in Part I (*Forum of Education*, November, 1928.)

These deviates are measured in terms of σ, the standard deviation of the distribution. What this is does not concern us : the important thing is that the mode, the mean, or the median (they are all the same for a normal curve) of the distribution is at deviate *o*. As a result, if we hazard the extrapolation when we find that the graph between mark and deviate for the first few cases is linear, we can estimate the mark corresponding to deviate *o*. This will, therefore, be the mark of the average boy.

If we consider cases of ranks 15, 30, 45, etc., we shall probably not find that the relation between mark and deviate is linear, that is, the assumption that the actual mark distribution curve is the tail of a normal curve as far as such rank is not true. In some cases the relation between mark and deviate is so irregular that we cannot

estimate in this way the mark corresponding to deviate *o*, i.e., the mark of the average boy. This is the case in the following table for ages 10.10 and 11.2.

Age	10.0	10.2	10.4	10.6	10.8	10.10	11.0	11.2	11.4	11.6	11.8	11.10
Estimated Mark of Average Boy of this Age.....	–53	8	56	44	103	×	61	×	106	59	123	100

This table can be smoothed graphically and we have the following results :

Age	10.0	10.2	10.4	10.6	10.8	10.10	11.0	11.2	11.4	11.6	11.8	11.10	12.0
Graduated Estimate of Mark of Average Boy of this Age	22	30	38	46	54	62	70	78	86	94	102	110	118

We conclude that the ages of the average boys corresponding to particular marks are given as follows :

A Mark of	118	126	134	142	150	158	166	174	182	190
Is the Average obtained by Boys of an Age of.....	12.0	12.2	12.4	12.6	12.8	12.10	13.0	13.2	13.4	13.6

These are the marks obtained by average boys at the corresponding ages, and hence these marks can be turned into educational ages by use of this table. Let us do this. The result is shown in Table III. From the educational age, knowing the chronological or physical (actual) age, we can obtain the ratio, the E.Q. (more correctly 100 times the ratio of the educational age to the physical age). The table shows the E.Q.'s for three sets of boys :

(*a*) The top boy of each age group.

(*b*) The bottom boy of each age group who actually received a scholarship.

(*c*) The bottom boy of each age group who would have been awarded a scholarship had the proposed allowance (2 per cent. p.m., 4 marks per month) been made. The actual figures are not of great value, as the whole procedure of this analysis is unduly simplified and lacks rigour, but they are of some value as indicating the order of the E.Q.'s involved. The present method of selecting scholarship holders clearly goes too deeply into the ranks of commonplace

Table III.

Age on 1926-8-1.	10.0–	10.2–	10.4–	10.6–	10.8–	10.10–	11.0–	11.2–	11.4–	11.6–	11.8–	11.10–
Top Mark of Array.....	120	171	157	146	174	171	169	166	175	185	171	190
Educational Age	12.0	13.1	12.9	12.7	13.2	13.1	13.1	13.0	13.2	13.5	13.1	13.5
E.Q.....	120	128	123	120	123	121	119	116	116	116	112	113
E.Q. of Bottom Scholarship Boy (Mark=149 : Educational Age=12.8)	—	124	123	—	119	117	115	114	112	110	109	107
In 2 per cent. per month compensation lowest Scholar's Mark.	133	133	133	133	133	133	133	141	149	157	165	173
Educational Age				12.4				12.5	12.7	12.9	12.11	13.1
E.Q.....	—	121	119	117	115	114	112	111	111	111	111	111

material at the higher ages; the correction suggested obviates this and recruits boys between 11 and 12 of the same E.Q. The smartest boy of the whole examination on the result of this enquiry is the candidate aged 10.2 –, who obtained a mark of 171, a mark that an average boy of 13.1 would probably get, so that the E.Q. for this candidate is 128.

VI.—Further Illustration of the Effects of No Age Allowance.

We have seen in Part I that if no age allowance is granted to boys competing for a secondary school entrance scholarship, an undue number of boys of higher ages are successful. In one of the secondary schools to which such boys are drafted these duller boys gradually work their way to the lower divisions of the upper forms. What about the unsuccessful boys? These have all one chance, when they are between 12 and 13, of competing for higher elementary places. The results of one such examination are, fortunately, available. They are not for exactly the same population of boys that we have just been investigating, since these would be competitors for these places in 1927. But as the examination is intended to be much the same each year, the 1926 results may be expected to exhibit the same features as those of the following year. There were 559 boys competing. Selection has operated here as follows:

(*a*) Boys who have obtained a secondary school are out of the competition.

(*b*) Some boys may not wish to go to a higher elementary school.

For our purposes we can neglect the second category. Examine the effect of the first. The result of removing an undue number of the brighter boys at the greater age will be to create a tendency for a negative correlation of marks with age. As the extra schooling and the added intelligence of greater age will operate in the opposite direction, we may anticipate that the increase of marks with age that we shall actually observe will certainly be less than in the scholarship examination, may be zero, and may possibly be negative. Actually, we find that whether we use method "A" or method "B" (considerations of time have prevented an application of method "C"), there is a certain increase of marks with age at the lower ages to about 12.4, and that after that age there is practically no increment at all (see Table IV). The problem of what should be the age correction here is very difficult. It is, however, largely academic, for if the scholarship examination be modified

TABLES IV AND VI.
HIGHER ELEMENTARY PLACES.
TOTAL MARKS IN FINAL EXAMINATION.

TABLE IV: BOYS.

TOTAL MARKS IN EXAMINATION.	*Age on* 1926-8-1	12.0 –	12.2 –	12.4 –	12.6 –	12.8 –	12.10 –	*Total.*
	180 –	—	—	—	—	—	—	0
	160 –	—	1	—	2	3	1	7
	140 –	4	6	7	5	9	3	39
	120 –	7	12	11	14	11	16	71
	100 –	14	16	14	17	16	17	94
	80 –	13	18	18	18	12	13	92
	60 –	19	19	22	21	16	12	109
	40 –	21	15	14	12	18	11	91
	20 –	18	8	6	6	5	6	49
	0 –	1	3	2	1	—	—	7
	Total	97	98	94	96	90	84	559
	Average Mark (as per cent.)	37	43	43	45	46	48	
	Average of Top 70..	44	51	60	63	63	63	
	Average of Top 40..	54	60	59	62	64	64	

TABLE VI: GIRLS.

TOTAL MARKS IN EXAMINATION.	*Age on* 1926-8-1	12.0 –	12.2 –	12.4 –	12.6 –	12. 8–	12.10 –	*Total.*
	180 –	—	—	—	—	—	—	0
	160 –	—	—	—	—	—	—	0
	140 –	—	1	4	3	1	2	11
	120 –	5	4	8	8	4	8	37
	100 –	12	16	8	12	19	4	71
	80 –	20	12	15	17	11	22	97
	60 –	19	26	13	21	20	18	177*
	40 –	17	20	12	13	22	14	98
	20 –	9	8	7	9	5	6	47
	0 –	1	—	3	1	1	—	6
	Total	83	87	70	84	83	74	481
	Average Mark (as per cent.)	37	38	40	40	39	40	
	Average of Top 70..	41	42	40	45	42	41	
	Average of Top 40..	50	50	53	54	51	50	

*One girl of unknown age had marks taking her in the array 60 –. She is not included.

TABLE V.

SECONDARY SCHOLARSHIPS (GIRLS), 1926.

TOTAL MARKS IN FINAL EXAMINATION.

Age on 1926-8-1	Total Marks in Examination.												
	10.0 –	10.2 –	10.4 –	10.6 –	10.8 –	10.10 –	11.0 –	11.2 –	11.4 –	11.6 –	11.8 –	11.10 –	*Total.*
180 –	—	—	—	—	—	—	—	—	—	—	—	—	1
160 –	1	1	—	—	—	—	—	—	1	1	3	1	8
140 –	—	—	—	1	1	1	2	4	—	3	4	6	22
120 –	—	1	2	2	7	2	9	11	15	12	12	11	84
100 –	1	3	3	4	9	4	16	14	19	9	14	16	112
80 –	2	1	6	8	17	12	16	15	25	24	20	20	166
60 –	2	5	12	15	17	14	20	23	16	18	18	15	175
40 –	1	3	9	4	9	16	6	11	17	16	11	10	113
20 –	—	5	—	4	1	3	8	2	5	2	3	3	36
0 –	1	—	—	1	1	1	—	—	1	—	—	1	6
Total	8	19	32	39	62	53	77	80	99	85	85	84	723
Average Mark (as per cent.)	—	—	—	—	—	—	43	45	43	43	46	47	—
Average of Top 70	—	—	—	—	—	—	46	48	53	48	51	52	—
Average of Top 40	—	—	—	38*	50	41	55	57	58	56	60	61	—

*39 cases only.

by the adoption of an age allowance the higher elementary place examination will present a different type of table of results in future years, as the " population " taking it will differ in important respects from that taking it at present.

VII.—The Sex Difference.

The above investigation has been limited to boys, although both boys and girls compete in the examination. Experience shows that the standards for boys and girls are different; of the total 140 scholarships half have to be awarded to girls. The results are published separately. It is natural to conduct our investigation separately into the two classes. We might anticipate peculiarities. The prepubescent dip of girls' development shows itself in some matters at the upper limits of the scholarship ages, and a mental analogue of this may be anticipated. Actually (see Table V) we find that there is not the same systematic increase in the number of candidates with age. Method " B " gives the corrections :

Best 70 .... 9 per cent. per year.
Best 40 .... 11 per cent. per year.

Take, therefore, a correction of 1 per cent. p.m.
This gives the following results for awards made :

Age	10.0 –	10.2 –	10.4 –	10.6 –	19.8 –	10.10 –	
No allowance	1	1	1	2	4	2	
2 marks per month	1	2	2	3	8	3	
Age	11.0 –	11.2 –	11.4 –	11.6 –	11.8 –	11.10 –	*Total.*
No allowance	6	9	8	10	13	13	70
2 marks per month	10	11	8	9	10	8	75

Stated by birthdays, we have :

Birthdays in	*Aug.-Nov.*	*Dec.-March.*	*April-July.*	*Total.*
No allowance	32	21	17	70
2 marks per month..	29	22	24	75

When we turn to the girls' higher elementary results (Table 6) we see that the effects of the prepubescent dip and of prior selection result in no age allowance being necessary for the examination in its present form.

VIII.—Note on the Racial Features Involved.

The population from which the above children are drawn is largely industrial and lower middle class. There is no wealthy quarter in the area, and the only professional men who live there are those few who have to reside near their place of business. The great majority of the population consists of clerks, artisans, and labourers of various kinds. Judging by surnames, the racial stock is chiefly East Anglian ; there are perhaps some 20 per cent. in all of the three elements : Welsh, Irish, and Jewish, in equal numbers. There is a remarkably small Scottish element. Burt has estimated that in London some $2\frac{1}{2}$ per cent. of the population are of secondary school standard, and of I.Q. 130 or over, and some $7\frac{1}{2}$ per cent. of central school standard (I.Q. 115—130). We find that of 6,000 children 140, or about $2\frac{1}{3}$ per cent., are awarded secondary school scholarships ; the indications appear to be that the standard of ability is not so good as in London. It must be remembered, however, that very able children are not usually so advanced in achievement as they are in capacity, so that for scholarship children the E.Q. is probably less than the I.Q.

IX.—Summary and Conclusions.

(1) In one area where there is no age allowance in the Free Place Examination an undue number of children of more advanced ages are successful.

(2) The less bright of these form later on an undue porportion of children in lower divisions of the upper forms of the secondary school.

(3) By various methods, an age allowance of some 2 per cent. per mensem is suggested, as compensating for the discordance, in the case of boys, for the particular examination and child population in question.

(4) By an assumption of normal distribution and a daring extrapolation rough estimates of the educational ages of candidates are obtained.

(5) The age allowance suggested in (3) makes the educational quotient of the lowest scholarship boy so estimated the same at all ages.

(6) The effect of no age allowance is investigated among the unsuccessful children who compete a year later for higher elementary places, and the general conclusions are confirmed.

(7) The earlier onset of puberty in girls appears to make progress in girls of scholarship ages less marked with age than in the case of boys.

(8) The child population as a whole may not be of such good stock as the London average.

APPENDIX.

SINCE the Editor received the two parts of the above paper the writer has had the opportunity of reading two other recent contributions on the question of the age allowance. These are :

(*a*) "The Treatment of Secondary Schools' Admission Examination Scores," by Mr. J. W. Collier (this Journal, June, 1928 : Vol. VI, No. 2, pages 144-150) ;

(*b*) Free Place Examinations " (Board of Education Educational Pamphlet, No. 63 ; Memorandum on Examinations for Scholarships and Free Places in Secondary Schools, 1928).

Each of these provides matter for two comments. It is clear that the question of age allowances is beginning to receive more attention ; the writer has in his foregoing paper had to use data of a comparatively small examination, because there seems to have been in the past great paucity of published statistical material ; a mere statement of averages (*see*, e.g., Mr. Collier, page 146) is insufficient : the double entry table of the type on page 24 is the minimum necessary for any sound investigation.

(1) Mr. Collier (page 149), says : " A candidate aged 10 years x months should suffer the same deduction, or receive the same allowance, as a candidate aged 11 years x months." This is a better method than the writer's, which was " between 10 and 11, only the allowance proper to age 11.0 is granted " (page 279).

(2) Mr. Collier (page 147) concludes that " for a set of children whose ages extend over one year at about age 11, an average allowance of, for arithmetic, one-twentieth, and, for English, one twenty-fifth, of the standard deviation, per month, is a close approximation to the required adjustment." This is fallacious : if the age distribution of the candidates be altered, a change that ought not to affect the correction, the marginal distribution would be altered, and thus the standard deviation probably change.

(3) The official memorandum suggests that age variations can be compensated as follows (page 65) : " Divide the candidates into

quarter-year (or monthly) groups so that each group includes candidates whose ages differ by not more than three months (or one month) and make specified numbers of awards separately to the candidates in each group : so that at one and the same examination any candidate would compete only with those whose birth dates fell in the same quarter (or month) of the year." This does not seem sound, for ability and attainments increase continuously and not by jumps : the oldest in any group so arranged would stand a better chance than the youngest. The writer's suggestion is that the correction should take the form of units, the "step" or "least count" commonly being one mark, so that if a correction of four per month is given this implies working to weeks and giving one per week. In the paper, the writer has worked in months for convenience. But the age might well be given in years and days (e.g., 11 years 235 days) and a correction of, say, 40 per year obtained sufficiently closely by granting one mark per nine days.

(4) The Memorandum makes a grave criticism when it says (pages 21-22) that " in a voluntary examination there is no guarantee that all the ablest children of the age group will sit." This is probably true. But the Higher Elementary Tables (Tables IV and VI) seem to suggest that probably at the old end of the eligible candidates, where 121 of some 500 sat for secondary scholarships, we had most of the ablest competing and successful. We found (page 276) that " the additional mark appropriate for the age correction appears to be much the same for the best forty as for the best seventy of each array." It is therefore submitted that the error incurred by assuming that all the ablest sit is not very serious, though we may be prepared to admit that our method gives a maximum correction for age, and that if the examination were compulsory so that all competed a slightly smaller correction would be found.

Some Notes on the Standardisation of Professor Spearman's "Measure of 'Intelligence' for Use in Schools."*

By E. H. Walters and F. C. Thomas.

I.—INTRODUCTION.

A measure of intelligence is of little value, except for purpose of comparison within selected groups of children, unless reference can be made to a "norm" or standard which will indicate how far each testee's score differs from the average achievement of normal children of the same age.

There are two chief methods by which a "norm" may be obtained :—

(1) *Individual Method.*—The test results may be collated with independent estimates of "intelligence" made by teachers or other qualified persons ; or with the results of such well-established tests as the Binet tests, administered to the same children.

(2) *Group Method.*—The "intelligence" of a certain section of the population may be determined by the tests under consideration, and again independently of the tests. If the section is a normal one, the mean test results are the "norm" required. Otherwise, reference must be made from the results of one section to another, and a "norm" calculated from a consideration of each.

In the present work both methods have been used, as explained in detail below.

*Spearman's "Measure of 'Intelligence'." (Methuen ; 1s.) is intended for testing children from 10 to 14 years of age. It is based on the two-factor theory of intelligence—i.e., that every mental process seems to involve two factors : a general supply of mental energy (*g*), which is common, in varying degrees, to all mental activities ; and a specific factor or factors (*s*), peculiar to the process under consideration. This general mental energy is what is usually understood by "Intelligence," and the tests in this Measure are chosen as involving a maximum amount of "*g*" and depending little on specific factors or on education.

There are seven tests, comprising Opposites, Synonyms, Classifications, Questions, Completion, Analogies, and Inferences. There are in all 163 questions, all given orally, and answered briefly by the pupils on slips of paper which they can prepare themselves. A stop-watch is used for timing, and the marking can usually be done by the pupils, the teacher being provided with a key in the test book. The entire test takes about one hour and twenty minutes, but can be given in two halves if necessary. It is of such a nature that any capable class teacher can, after a little practice, use it without difficulty, and a careful study of Professor Spearman's introduction should help to give an accurate interpretation of results.

When Professor Spearman published his " Measure of ' Intelligence ' " he made an appeal to users of the test to forward to him lists of the results they had obtained, together with the ages of the children tested and any other relevant information. It was hoped that sufficient material might be obtained for the construction of " norms." Some 2,300 results were sent in from schools of all sorts—town and country, public and private, English, Scottish, and Canadian.

In the first place the results for each school were plotted on squared paper and a curve drawn ; a consideration of these curves showed that the material used for constructing a " norm " would have to be very carefully selected. Each school is in itself so highly selective that it is impossible either to pool all results indiscriminately or to take the results of one school as indicative of what ought to be achieved in another.

For instance, some 750 results were sent in from the first and second-year pupils of a Scottish secondary school. The children enter the school on passing a qualifying examination in arithmetic and English. This is taken at the age of 11 years, and if a child does not pass he tries again at 12 and again at 13. Consequently, in the first two years in this school the pupils varied in age from 11 years to 15 years and 9 months. The " intelligence " curve for these children shows very little variation of " intelligence " with age, and this seems reasonable, for those who entered the school at 11 would be as well developed intellectually as those who entered at 13. These latter, being well over 15 at the end of their second year, are presumably not more " intelligent " than those who have reached the same stage at the age of 13. Consequently, their achievement curve (dotted line X on Graph 1) cannot be taken as indicative of the intellectual growth of normal unselected children. Similarly, a curve obtained from the qualifying classes of Scottish elementary schools gives the apparently contradictory result of " intelligence " decreasing with age. This is explained by the fact that the brighter children pass the qualifying examination at an earlier age, so the older children left are the duller (dotted line Y on Graph 1).

Thus, as previously stated, the results from so many different schools cannot be pooled ; their individual merits must rather be assessed in the light of their consistency with each other, the number included, and the information furnished with them. It did appear, however, that the results received fell into two main groups, elementary and secondary, and it was hoped that two definite curves might be obtained from these groups, and a " norm " calculated from them.

II.—RESULTS.

(*a*) Secondary Schools.

Results received from secondary schools were so scattered over ages varying from 9 to 17 years, and by the inclusion or exclusion of whole groups of children (e.g., scholarship holders or matriculation candidates) that it was difficult to obtain a fair sample of children of different ages in any one school. For this reason use was made of the results from four schools only. The difficulty of obtaining test results from older children, usually too busily occupied in preparing for examinations to be tested, limited the construction of "norms" to the age of 14.

The characteristic curves from these four schools being fairly consistent with each other, their results were pooled, 998 cases being used, about equally composed of boys and girls, and of similar social status, viz., the children of clerical workers, business, and lower professional men.

The characteristic curve was as follows:

Age	10	10.6	11	11.6	12	12.6	13	13.6	14
Score	105	111	116	121	126	130	133	135	136

This curve is plotted in Graph 1 as the upper of the two firm lines. It was then necessary to determine as nearly as possible the "intelligence quotient" which this line represents. This the authors were enabled to do with some accuracy by employing further data which included records of age, I.Q. as measured by the Binet Stanford tests, and score at Spearman's "Measure." There were thirty-one cases; the means and probable errors of the ages, I.Q.'s, and scores were as follows:

	Mean.	*Probable Error.*
Age	12·14	·123
Score	126	1·82
I.Q.	110	1·78

Thus we are given a point (age 12·4, score 126), situated very conveniently near our first data curve; and, knowing that the I.Q. represented by this point is 110, we can calculate the I.Q. represented by a neighbouring point on the curve itself in the following way:

According to the graph a child aged 12·0 scores 126. Let his I.Q., which we are seeking to determine, be z. According to the data comparing this test with the Binet test, another child makes the same score (i.e., 126), if he is 12·14 years old, and has an I.Q. of 110. Now, since these two children make the same score, the ratio of their ages will clearly be the inverse of the ratio of their I.Q.'s, i.e. :

$$z : 110 :: 12{\cdot}14 : 12{\cdot}0$$

From this $z = 111{\cdot}3$.

Thus the value I.Q. 111 has been assigned to the secondary school curve (upper firm line in Graph I) since, if it is truly characteristic of some particular I.Q., its value throughout the whole length will be constant, and sufficiently established when the value of any point along it has been determined.

From this an I.Q. 100 curve has been calculated in the following way :

A child aged 10·0 with I.Q. 111 scores 105. Hence a score of 105 represents a mental age of 11·10, and a normal or I.Q. 100 child of 11·10 would score 105. Similarly a child of 14 with I.Q. 111 scores 136. Hence a score of 136 represents a mental age of 15·54 $\left(111 = \frac{15{\cdot}54 \times 100}{14{\cdot}00}\right)$, so a child of 15·54 with I.Q. 100 would be expected to score 136.

Intermediate ages for the different scores were calculated in a similar way, and the resulting I.Q. 100 line is shown as the xxxx line in Graph I.

(*b*) Elementary Schools.

Some 1,200 results were received from eleven different schools, these were examined, and a characteristic curve plotted for each. A number had to be rejected as before, as giving too few cases, or being too highly selected ; of those which were used the curves were practically coincident. These were amalgamated ; the resultant curve, which is shown as the lower firm curve on Graph 1, being :

Age	10	10·6	11	11·6	12	12·6	13	13·6	14
Score	79	86	92	98	103	108	112	115	117

Once again the problem was to establish as accurately as possible the I.Q. represented by this curve. No Binet results being available, another method had to be devised. The occupations of the fathers

of 185 children who performed this test were graded according to skill required in their performance by reference to a table (*see* Appendix II), which assigns I.Q.'s to each grade of occupational skill. The result was as follows :—

Grade.	*No. of Cases.*	*I.Q.*
3	10	115—130
4	59	100—115
5	35	85—100
6	76	70—85
7	5	50—70

Mean I.Q.=92, probable error, .76.

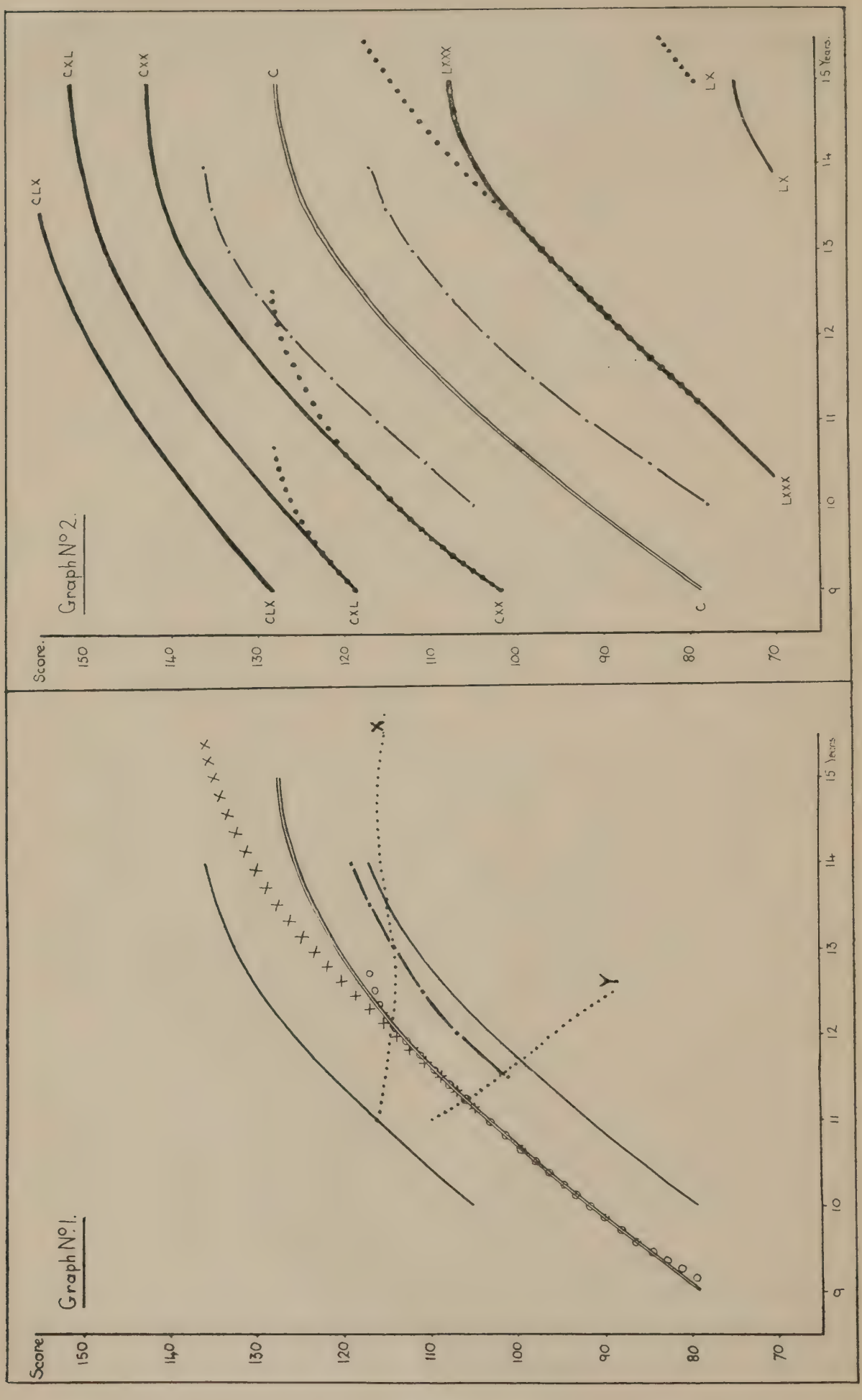
This stamps the social status sufficiently for us to expect the mean I.Q. of boys of this class to be in the neighbourhood of 90—95. Their performance in the test was as follows :

Age	11·6	12	12·6	13	13·6	14
Score	101	107	111	114	117	119

which is shown as the short broken curve in Graph 1.

It was then found, after various calculations, that if the slightly lower elementary schools curve was assumed to represent I.Q. 91, a second I.Q. 100 line could be calculated from it which was in perfect agreement with the I.Q. 100 line already calculated from the secondary school results. This second line is shown on Graph 1 as oooo, where it is seen to coincide completely with the first curve xxxx.

These curves, however, cannot be taken as "norms," for they have been obtained by applying a principle which breaks down at the ages when the growth of "intelligence" becomes less rapid. From such curves as these it must appear that it is quite impossible for any child, however intelligent, to score more than 128. As the two curves, I.Q. 111 and I.Q. 91, established by experiment, were found to be parallel throughout their whole range, the authors have been content to regard these dotted curves merely as guides and to draw in a curve (double line in Graph 1) parallel to the two firm data curves, to represent I.Q. 100.


Graph N° 1.
Score
150
140
130
120
110
100
90
80
70
9
10
11
12
13
14
15 Years
X
Y
Graph N° 2.
Score.
CLX
CXL
CXX
C
LXXX
LX
15 Years.

From this, and by the method described in paragraph IIa, curves have been calculated for every tenth I.Q. from 60 to 160. These are shown as the firm lines in Graph 2, the dotted lines being those obtained by experiment. From these firm curves has been calculated the data shown in Appendix I.

III.—CONCLUSIONS AND NOTES.

The authors have been hampered throughout by lack of really definite material; what they have used, though varied and consistent, has not been as extensive as is desirable. They would, therefore, first warn users of this standardization against overestimating its validity among the extreme upper and lower I.Q.'s, and, secondly, they would welcome any *comparative* data for the purpose of publishing a revision (not less than three years hence).

It would be ungracious to close these "Notes" without extending cordial thanks, in which Professor Spearman joins, to all who have forwarded results, and especially to Messrs. R. J. Bartlett, J. Hardie, A. Laugher, F. Luke, and A. J. Perring, also to Mr. L. E. Turmaine for assistance in preparing the graphs for publication, and to Mr. A. J. Frearson for his co-operation in examining and assessing the data summarized in the second table of par. IIb.

Appendix I.

Table of "Norms."

Age ..	9.0	9.6	10.0	10.6	11.0	11.6	12.0	12.6	13.0	13.6	14.0	14.6	15.0
Score:													
65	88	83	79	75	72	69	66	63	61	—	—	—	—
70	92	87	82	79	75	72	69	66	64	62	60	—	—
75	97	91	87	82	78	75	72	69	67	64	63	62	61
80	101	95	91	86	82	79	75	72	70	67	65	64	63
85	105	99	95	90	86	82	79	76	73	70	68	67	66
90	109	103	98	94	90	86	82	79	76	73	71	69	69
95	114	107	102	98	94	89	85	82	79	76	74	73	72
100	118	112	107	102	97	93	89	85	82	79	77	76	76
105	123	116	111	106	101	97	92	89	86	83	81	80	79
110	129	121	116	110	105	101	97	93	89	87	85	84	83
115	135	127	121	116	110	105	101	97	94	91	89	88	87
120	142	134	128	122	116	110	105	102	99	96	94	93	92
125	153	143	136	129	123	117	111	106	104	101	99	98	97
130	—	154	146	138	130	124	118	112	108	106	104	103	102
135	—	—	157	148	140	132	125	120	114	111	109	108	108
140	—	—	—	160	151	142	135	128	124	121	118	117	116
145	—	—	—	—	—	156	147	140	134	130	128	126	126
150	—	—	—	—	—	—	—	153	147	142	139	137	137
155	—	—	—	—	—	—	—	—	161	159	157	156	155

INTERPRETATION.

The I.Q. corresponding to any given score can be found by reading the age along the top line and the score in the left hand vertical column. Intermediate scores and ages can be interpolated as necessary; when there is doubt as to which of two I.Q. marks to assign to a child he should always be given the higher.

Appendix II.

Table of Educational Categories.

(The table to which reference has been made, quoted by Dr. Burt in the Report of the Industrial Fatigue Research Board.)

Mental Ratio.	*Educational Category.*	*Per cent. of Children.*	*Vocational Category.*	*Per cent. of Adults.*
150+	Scholarships (Univ. hons.)	.2	Highest prof. administrative	.1
130/150	Scholarships (Secon'y)	2	Lower prof. and tech.	3
115/130	Central and Higher Elem.	10	Clerical and highly skilled	12
100/115	Ordinary Elem. ..	38	Skilled and minor commercial.	26
85/100	Ordinary Elem. ..	38	Semi-skilled and poorest commercial.	33
70/85	Dull and backward classes	10	Unskilled and coarse manual labour ..	19
50/70	Special M.D. Schools..	1.5	Casual labour	7
50 –	Ineducable	.2	Institutional .. .. (Imbeciles and Idiots)	.2

Appendix III.

Notes on the Technique of Administering the Measure of "Intelligence."

Now that this test has been in use for some three years it seems advisable to publish a supplementary note to the instructions for its use, based on the experience of a large number of experimenters. The following additions and modifications have been suggested and meet with Professor Spearman's approval:

(1) The children should be told that no account will be taken of spelling. Wrong spelling will not count.

(2) Every question will be given twice. (Instructions to this effect only appear after Tests 1 and 2.)

(3) In Test 1 six seconds are sufficient to allow for writing the answer.

(4) Where there is a choice between phrase instead of words (e.g., in qu. 93 and 118) children should be instructed to give the complete phrase as the answer.

(5) Where the sound of a word may suggest two meanings it should be written on the blackboard before the test question containing it is read—e g.:

Qu. 37 ..... whole.
Qu. 46 ..... allowed.
Qu. 60 ..... break.
Qu. 60 ..... wait.
Qu. 108 ..... presents.

(6) If necessary a break may be made after Test 3 or 4—i.e., the test may be given in two parts without detriment to the validity of its results.

(7) The score is always taken as total 163—i.e., no deduction is made on account of the questions explained as examples.

The Training of Teachers in the United States.

By Emily Mason.

Within the last twenty-five years American philosophy and educational theory have at least aroused considerable interest in this country. But undoubtedly there has been greater willingness shown in America than here to put this philosophy into practice, for the American educator has the faith, the buoyancy, and the optimism of a child. Except in schools which prepare pupils for the eastern private colleges, the pressure of external examinations is not heavy, and in addition the teachers themselves are willing to experiment. If, however, we were to compare an American college student of twenty years of age with a British student of the same age, I do not think that there is any question that the British student would be superior, not only in scholarship, but also in ability to study alone and to direct his work according to some self-sought purpose. Many factors unite to explain this situation : it is unfair to claim because Britain, with old-fashioned methods and philosophy, produces better students than America with a new philosophy, that if America resorted to our philosophy of the past good results would be achieved. It is tempting, but none the less illogical, to blame poor results on a factor which we ourselves should wish to find at fault.

Amongst the factors which *do* explain the situation, probably the most potent is incompetent teachers. Many high school teachers have no college degree, and those who have are very frequently not teaching the subjects in which they specialized (as far as specialization is possible in an American college). Half of the elementary school teachers have had less than two years' training after leaving high school, and one quarter of the rural school teachers have had less than two years' *post elementary schooling*. Added to this is the fact that the averge pupil who enters training college is about two years retarded educationally compared with our pupils, that is to say, he is weak in subject matter. I do not wish to labour these facts, but rather to present some points still under discussion, and some suggestions made by educational leaders in America for remedying the situation. Some of these suggestions, I hope, may have bearing on topics at present under discussion here in Scotland.

The first problem that is being faced is the selection of students for training. Of course, it must be understood now and in what follows that there are forty-eight states in the Union, and there are

at least forty-eight sets of regulations for the certification of teachers. Diversity is the outstanding feature of American education : when, therefore, I say that a problem is being faced I may only refer to a small section of the country. This warning being delivered, we may return to the problem. In at least one state containing two-year training colleges, an attempt is made each year to assess the number of teachers which will be required in that state two years later. The enrolment of students each year is then limited to the number likely to be required when their period of training expires. Experience has shown that the number required can be calculated to within a small percentage of error ; but, undoubtedly, such a calculation is more after the heart of an American than of a British administrator. While, until recent years, the problem in America has been to find enough students, with us at present over-supply of teachers is more in evidence. The tendency is for admission to our training colleges to be limited rather by the capacity of the college than by the future official needs of the schools, and many trained teachers have had difficulty in finding employment. Time and money, however, are both necessary for scientific investigations, and the latter especially is hardly as abundant here as in America ; but we may at least preserve the idea of scientific investigation of this problem till our national debt ceases to exist.

A second step in attacking the problem of selection is the testing of students who present themselves for training. Intelligence, educational, and temperament tests, are all administered to the aspiring students of one training college, although little use is made of the last group, and they are not so systematically given. The deplorable deficiency of the students in elementary subject matter was responsible for the beginning of the testing. Although *we* hear occasionally of students deficient in grammar and local history, the possession by our prospective teachers of the Scottish Leaving Certificate does ensure a certain knowledge of subject matter. On the other hand, if the over supply of students offering themselves for training becomes great, a judicious application of tests might enable us to eliminate those candidates who had acquired a Leaving Certificate only by unintelligent cramming. Character and temperament tests are as yet of little practical use, but they are none the less the most interesting and the most provocative of criticism. We have heard that high-minded young men and women must be urged to enter the teaching profession ; so far high-mindedness has been a matter of personal opinion, and connotes in some circles a man who doesn't smoke and a girl

who wears long skirts. If ever we do succeed in measuring character traits, then I can think of no more suitable occasion to make practical use thereof than when we are selecting future teachers.

The students, having been selected, must be trained. The second problem which is receiving attention is, therefore, the improvement of methods and facilities for training. First, we may consider the actual training in the art of teaching. All curricula in schools and colleges in America tend to be composed of small divisions of subject matter. What we call methods and practice of teaching would have at least three sections, namely, principles of teaching, observation and practice, all nicely pigeon-holed. The theoretical aspect in a two years' course is necessarily superficial. With regard to observation, it is a very scientific procedure in some colleges ; much greater use is made of the demonstration lesson than is usual here, and it is definitely arranged to show some specific good points in teaching technique. In one training college* the senior class has at least one demonstration lesson a week. A verbatim report of some of these lessons would form interesting reading ; my experience is limited, but I did feel that lessons with such a definite purpose could hardly avoid a certain artificiality, and that, if over frequent, they tend to " spoonfeed " students by isolating factors which they would have to analyse for themselves if they were required to pass judgment on a teacher at any time. It seems that, especially in America, the students' power of discrimination needs encouragement. On the other hand, teaching practice in Scotland may be so arranged that the student rarely, if ever, sees outstandingly good teaching. Some may be fortunate enough to be under a good teacher and to see his moments of inspiration ; to such a situation no set lesson is superior. But not all are fortunate, and it seems as if some steps might be taken to guarantee to every student a period of observation in a model school or under an outstanding teacher in a neighbouring school. To safeguard a student from seeing any bad teaching is not, however, necessary ; a fruitful hour may certainly be spent in observing a fellow student give a bad lesson. As regards actual practice in teaching, facilities on the whole are better in this country ; but we do find our students complaining that the teacher under whom they practise is afraid to risk her class with them often enough for them to attain reasonable proficiency and assurance. We can sympathize with the teachers, who have probably examination results in view. Several colleges in America are at present hoping to have at least elementary practice schools

*Montclair Normal School.

run by the college where *all* their students will do teaching practice ; the ideal in view is that the teachers staffing these schools should be so excellent that they can afford to have the class taught half the day by students, they themselves being able to teach in half a day as much as other teachers could teach in five-sixths of a day. The scheme is difficult to visualize, and the practical difficulties are great. But if only good teachers can be selected to supervise students in training the students could reasonably demand more actual practice.

Related to the question of training is that of certification of teachers. In Scotland certificates to teach in secondary and advanced division schools are limited to subjects in which the students have specialized in their university course ; this is true in very few states in America. Although it is becoming more usual for high school teachers to have a college degree, they may be required to teach subjects which they did not even take in their degree. The interesting point is that almost in advance of the attempt to specialize high school certificates, we find the tendency to specialize elementary school certificates. Kindergarten work, as here, is in a category by itself. In addition, many training colleges now offer two different courses for elementary teachers which they call primary and intermediate. Leading teachers advocate at least three different certificates—primary, intermediate, and advanced—and recommend that students should only teach in the " grades " named on their certificates. There is, however, considerable opposition. In favour of the scheme is the fact that the teaching of a subject like reading does differ from Standard I to Standard V and that a two years'course is not very long in which to give a comprehensive training. On the other hand, it is likely that considerable difficulty will be found in placing teachers according to such specialized qualifications ; and also the teacher should know how the class has been taught before she received it and what will happen to it after it leaves her. Over-specialization can be a curse, and so can inefficiency ; the feud between them is yet without conclusion, and it is therefore interesting to observe offensive measures on either side and attempts to reach a compromise.

Another important improvement in teacher training suggested in America is greater attention to the subject which is to be taught ; this is particularly essential in the case of high school teachers. Certainly herein lies one of our chief points of superiority ; it is not usual to find a teacher in our schools who is ignorant of such part of his subject as must be taught in school. Due to the existence of

almost an antipathy to scholarship, this is not true of American schools. We need not dwell on this point save to remind ourselves that method without subject content is dangerous and tends to be ludicrous. The old standing rivalry between universities and training colleges may be traced back to the fear of an empty pedagogy. I heard the expression "a trained personal friend" applied to a prospective adviser of girls in a high school, and I had the feeling that it was assumed that the friendliness could be acquired by training—which is unlikely. So, too, we cannot learn any subject by learning how to teach it.

A further step in the improvement of training facilities in America is the development of the teachers' colleges giving a four years' course leading to a B.A. in education. The origin of these colleges is interesting. In the first place the two years' college was at a disadvantage when competing with the state universities for students and staff; for the university, by giving a four years' course, had greater prestige. Moreover, students who had completed a two years' course and wanted to continue their studies received no credit at the university for their previous work—a state of affairs which still prevails in this country and in the private colleges in the eastern states of the Union. Advanced courses in psychology, education, and methods, were, therefore, given by some two years' colleges till the curriculum grew to be of four years' duration. In almost all the teachers' colleges (of which there are more than one hundred now), two years' courses are still given; but there is a distinct tendency to lengthen the period of preparation and to aim at the ideal of all teachers having a college degree, no matter in what "grade" of the school they wish to teach. There are certainly advantages in this longer preparation, as Mr. Lance Jones pointed out in his "Training of Teachers." There is a danger of attempting too much in a shorter course, and cramming results just at a time when the student's personality, character, and outlook should be being developed slowly and carefully for the work to come; a longer course might help to eliminate this danger, and also to avoid premature specialization. Again, scientific knowledge has increased within the last decades, and the school curriculum is a much more elaborate affair than it was when the two years' training college was first begun. Mr. Lance Jones also notices two features which would appeal particularly to a British observer—the possibilities of more student activities and of the growth of tradition. While one hears a great deal about "extra curricular" activities in American schools and colleges, the American student is not so

inclined as we are to recognize social intercourse and games as part of a healthy existence. Even extra curricular activities to-day are so often obviously "educative," and the afternoon emptiness of a British university library is unknown. Time to live socially—if the expression may be pardoned—would be one asset of a longer college course. The growth of tradition, which is tantamount to a respect for ideals embodied in an institution, is comparatively easy, even in a two years' college if it is small; but in the land of magnificent distances, the colleges are of magnificent sizes, and it would be difficult even with four years' courses to attain a sense of unity. It is worth trying, however; one has only to experience the lack of this sense of unity to realize how important it is. Picture a graduate school for teachers enrolling in one year some five thousand students, comparatively few of whom stay for more than one year, and you have the opposite extreme to a coherent collegiate life. Undoubtedly the latter is advisable at some period of a student's life and a four years' teachers' college is one method of dealing with this felt need. And, lastly, a longer period of preparation has been shown to lengthen the period of service in the profession; in America, where the average time spent in the teaching profession is only eight years, this would be a great asset.

We in this country would be glad to share some of the advantages of the four years' college, particularly equality with the universities in competition for staff or students. But we must face the economic aspect, which is weighting the position in America also. We want to make the period of preparation just so long that it will be entered upon by students in consideration of the remuneration that the state can offer at the end of the training. It is unlikely that teachers' salaries will be raised, and it is most unlikely that students will undertake a longer period of training for the present salaries unless the profession becomes increasingly overcrowded, when economic factors would force the offer of better material at the same price. While, therefore, the four years' teachers' college is not a possibility here in the near future, it does have bearing on the relation of the universities to the training colleges—a question of present interest.

The third problem which is receiving attention is the status and remuneration of teachers when they have been trained. It has been and still is possible in some parts of America to obtain a teacher's certificate simply by passing written examinations; this proceeding has fallen into disrepute. Moreover, what is known as the single salary schedule is now arousing considerable interest

and support. It is still usual to grade teachers' salaries according to the section of the school in which they are teaching, rather than according to their qualifications and training; and primary teachers receive the lowest salaries. The iniquity of this system is not so obvious to us, in that our secondary school teachers have usually had a longer period of preparation than our primary school teachers; and the primary teacher with a degree receives in Scotland a higher salary than one with a two years' certificate. Financial reasons still prevent the honours student from undertaking primary teaching even if he feels more attracted to that work; it is, however, unlikely that in our life-time teachers will be paid according to the secondary school scale to teach in primary schools. And yet I am inclined to think that the honour student is usually a better student than the pass student, in the sense of having more definite interests. If, then, we want as good teachers in primary schools as in secondary schools, we must be prepared to meet the cost. Payment according to period of preparation and capability is only one side of the economic question, but it is worth consideration.

From the Scottish point of view, one of the most interesting features of salary schemes in America was that in several states rural teachers are paid a higher salary than city teachers with the same qualifications; for example, if the minimum salary for a young teacher in Baltimore county is the equivalent of £160 a year, the minimum salary for rural school teachers is £180. And even so it is found difficult to draw good teachers from the towns, and those who come stay but a short time. The problem of adequately staffing rural schools is acute in Scotland; wherefore the attempt being made to remedy the position in America is deserving of our attention. And some day the gods, who are thought to have a fondness for the country, may of their bounty uncover a gold mine. If the rural teacher, removed from libraries, theatres, and lectures, is to keep in touch with a world of varied interests, he will spend a small fortune on books and periodicals alone—a fortune greater than that he saves by living in a mythically cheap village. The country is delightful, but it is an expensive place in which to live if one is not to lose sight of a world of which the village is but part, and if, as a rural teacher, one is to be a real and stimulating force in the community.

When Scottish teachers have finished their college courses little attempt beyond pious exhortation has been made to continue their training and to maintain a high standard of efficiency. Only within recent years has the summer school movement developed,

and it is not yet widespread. It was natural, however, that in America, where teachers were able to gain certificates with little or no training, the summer school movement should have developed more widely. The training of teachers in service is assumed as part of the educational programme of a state. This training has two phases—the provision of supervisors and the organization of summer schools. Supervisors are mostly appointed for work in the elementary schools ; at worst they may be little more than inspectors, at best they must be an enormous help to young teachers. They visit according to the needs and experience of the teachers in their district, every month perhaps, and they continue the work of the supervisor of practice teaching in the training college, making suggestions as to methods and discussing difficulties. While an experienced teacher might be inclined to resent interference, and while there are other imaginable dangers in supervision, as long as we are sending some of our poorest and most inexperienced teachers to the most difficult posts in rural schools some adaptation of this system might be found useful.

More debatable is the function of the summer school and of graduate classes for which teachers may have leave of absence from school. An investigation undertaken recently in America went to show that in the first five years after leaving college, teaching efficiency increased as a result of experience, but that after this period efficiency only increased in the case of teachers who had attended summer school or taken additional classes. One wonders whether, if there had been no summer school, it wouldn't have been the same teachers whose efficiency increased. Not that I should wish to see summer schools discontinued ; when the stimulus to attendance is interest and desire for assistance, they can be vital factors in teaching ; and in America they are still necessary to give preliminary training. But as soon as material award in the way of salary and promotion is made dependent upon such attendance and the system of credit for points taken is introduced, a terrible mechanizing of the whole situation takes place. I believe that one Scottish authority is making a salary increase above the maximum a reward for " taking points " at summer school. The " point " system has been described by an American as a proceeding useful for book-keeping and for the conferring of a degree, but educationally worthless. This is an extreme view, but not too extreme to one who has seen thousands of overworked women teachers busy accruing points in the summer that they may gain an increase of salary. While at the earlier stages of preparation

a reasonable economic return must be sought, the mature teacher should be able to take wider views, unless the profession is very badly paid.

In this connection I have often wondered whether the cultivation of wide interests and the enjoyment of leisure as a result of social and cultural development are not the most essential things for a teacher. It was interesting, therefore, to learn that, according to Professor McCall, the best test of teaching efficiency so far evolved is a " social information " test, e.g., " Who is Betty Nuthall ? " " What is the most popular play of the season ? " " Who is the best bowler in the county cricket team ? " It follows, if this is true, that many teachers would be better occupied travelling during their holidays, meeting economists, artists, and such people, and reading the year's " best sellers " than attending summer school. It seems undesirable, therefore, to make summer school almost a financial necessity, as is the case in America, because many teachers must then give up the only time they have had for social and cultural interests.

In conclusion, I think we may fairly say that the great need of the teaching profession in America, and here, is a little more philosophy. An American professor made the remark " Philosophy doesn't mean anything to us," referring to the American people as a whole ; and whether we call it philosophy or not, there is a lack of direction and purpose in much of our professional work. It is amazing how little we hear in many training colleges of the joys of teaching, and it is interesting that the most familiar expressions of this joy have come from classical masters in large schools. I will not fallaciously prove from this the superiority of the classics ; rather it would seem to suggest that the best students (in no purely scholastic sense) of a generation or more ago frequently had their studies directed along classical lines. There is an ugly word, " purposeful," which describes rather well the type of life which is needed and had been wanting amongst teachers.

If some of the foregoing suggestions seem the idle fancies of a wealthy country, we may remember that much of the rich man's wealth is spent on accessories, and that the essential features of his comforts can often be attained by the comparatively poor.

Judgment and Reasoning in the Child.

By Jean Piaget. (Kegan Paul, Trench, Trubner, and Co., Ltd. Pp. 257. 10s. 6d.)

In this book M. Piaget continues the study of child thought begun in his earlier work, "The Language and Thought of the Child," which was reviewed in The Forum in June, 1927. In the earlier work Piaget's main thesis was that the child's thought was largely ego-centric, his expressed thoughts being frequently monologues in which the audience, if appreciated at all, were only appreciated as an audience of foreigners who did not understand the language might be. In the present work Piaget traces what he regards as the consequences of the ego-centricity of the child upon his judgment and reasoning.

The present book, like its predecessor, is based on a large number of records of children's reasonings, their performances in appropriate mental tests, their attempts at definition, and so on. Like the earlier volume, it is beyond doubt an important contribution to a neglected aspect of child psychology.

The child's thought, Piaget maintains, reveals several peculiar characteristics, before the age of eleven or twelve, and especially before seven or eight.

In the first place there is "synthetic incapacity" similar to that shown in the child's drawing of a man in which the various parts may be drawn without their proper relations being shown. So in thought there is "juxtaposition" without true relating, though there may be apparently "syncretism," namely excess of relating, or at least of connecting through unanalysed analogy.

The need for anything like logical demonstration is held to be merely a social growth and hence scarcely appears before eight years of age, when ego-centrism begins to decline.

The lack of conflict gained through social intercourse accustoms the child to taking essential points in his reasoning for granted so that he cannot justify his reasoning. In particular there is an absence, so Piaget contends, of a felt necessity of consequences following the given premisses. The word "therefore," he finds, does not appear spontaneously in children's talk until about eleven or twelve, and where the word "then" (used as equivalent to "therefore") *is* used spontaneously at an early age, e.g., from four to seven, the deductions are only individual ones, i.e., from particular to particular.

Piaget gives considerable attention to the study of judgments of discordance involving relations expressed by " although." Explicit discordance like necessary deduction shown by the direct use of " although " involves, he argues, a knowledge of general prepositions and hence these two do not appear until about the same time, namely, eleven or twelve. Implicit discordance, however, shown by the use of " but," may appear about seven years of age.

I suggest that in this very fundamental point Piaget greatly under-estimates the ability of younger children to deal with general propositions and their consequences. As to the formulation of general propositions, Stern notes the inductive process as taking place just under five in one of his boys, and I have myself observed in a child of seven correct inferences from purely hypothetical premisses of a syllogism, and the immediate detection of the fallacy involved in the inference from a particular major premiss instead of the universal.

Furthermore, I cannot understand why Piaget does not more frequently refer to the distinction between apprehending *true* relations and apprehending relations of some kind. Syncretism implies that " everything is connected with everything else which comes to exactly the same thing as that nothing is [correctly] connected with anything else " ; i.e., juxtaposition. This seems to be true if we insert, as I have done, the word "correctly" ; otherwise the two things are surely very distinct psychologically. If, however, the correctness or incorrectness of the relations apprehended is the important matter, then Piaget's main qualitative distinction between child thought and adult thought would seem to disappear and we should have instead a distinction between objectively correct and incorrect, though, of course, the absence of general propositions and their usage among children (if that could be proved) would remain, and also the lack of perceived necessity of inference.

For the testing of formal reasoning, i.e., the drawing of necessary inferences from premises which may be merely hypothetical, Piaget used some of Binet's Absurdity Tests. He points out quite truly that young children will often refuse to admit for the sake of argument premisses that are themselves unlikely. I should demur, however, to his interpreting the child's attitude as due to lack of detachment from one's own point of view or from the view of the moment. The other requirement which he states as necessary seems to me to be adequate to explain the child's attitude, namely, the inability " to remain on the plane of mere assumption." Piaget argues that

a child can only understand what a hypothesis is when he can get beyond his personal beliefs. True : but does not this begin when a child first thinks " perhaps there is a cake in the cupboard," or " suppose there is a ghost in the bedroom " ? May not objective reality first stimulate hypothesis-making before social intercourse does so ?

I have not space to deal with the detailed results of Piaget's tests nor of the interesting results he gets from attempts at definitions. I may add, in conclusion, that Piaget seems to underestimate greatly the early social impulses of the child. My own observations convince me that the child of three or even two will often be most insistent on his ideas being understood and upon communicating his ideas to those with whom he feels thoroughly at home.

A second suggestion that I would make is that other factors which limit the reasoning powers of the child, for example, the relative strangeness of ideas, the perhaps consequent small " span of apprehension," to which Piaget himself refers once or twice, play a much more important part in delaying the development of complex reasoning than Piaget's treatment would suggest.

None of these criticisms, however, prevent one from appreciating the great value of the extensive enquiries and the careful reasoned analysis of M. Piaget's work and the fruitful nature of his hypothesis as to the great importance of social intercourse in developing reason and thought. What is surprising is that he does not dwell upon the great possibilities of deliberate intercourse with the child, if his views are right. Surely it should be possible, in his view, to put forward by three or four years the development of child thought by providing the social stimulus needed.

Finally it is only fair to the children to point out that many of their characteristic weaknesses indicated in this book are still frequently to be found in adult thought.

I trust that in a further edition M. Piaget will see to it that the index is thoroughly revised and extended. At present it is most inadequate. Two errors in translation occur : " In a judgment " (page 69, line 9) should be " from a judgment " ; and " reversible " (page 190, last line but three) should be " irreversible."

C. W. VALENTINE.

Secondary School Examination Statistics.

By J. M. Crofts, M.A., D.Sc., Secretary to the Joint Matriculation Board of the Northern Universities, and D. Caradog Jones, M.A., Senior Lecturer in Social Statistics, University of Liverpool. (Longmans, Green, and Co., Ltd., 1928. Pp. viii+88. 2s. 6d.)

THIS little book represents the joint work of an examinations administrator and a statistician. By the light that it throws on the working of the secondary schools examinations and the suggestiveness of the value of its results in more general ways, it is worthy of careful notice.

The N.U.J.M.B. has, among secondary school teachers, the reputation of being, perhaps, the most alive and satisfactory of all the eight examining bodies, and Dr. Crofts has helped to this appreciation by taking his teachers before now into his confidence. In " Education at Work " he gave an article on the School Certificate and Higher School Certificate Examinations. This was a very instructive and illuminating introduction. It was followed in 1927 by his paper before the British Association. Now he has written this booklet, and called to his aid a statistician of repute. Mr. Caradog Jones is, presumably, responsible for Chapter I on Statistical Analysis. He has therein brought Dr. Croft's nomenclature for, e.g., ogive curves, into line with current statistical practice. Dr. Crofts gives us chapters on S.C. and H.S.C. Examinations. The result is most informative, as was to be expected from the experience of the authors. The material obtained in a carefully conducted examination of fourteen or more thousand candidates is far more valuable than that on which usually psychologists have to work, and is enough to gladden the heart of any statistician. An S.C. examination should virtually act as a census of selected children of the country. In such large areas differences of teaching ability (probably, say American investigators, nowhere very great in the main) will level out and we shall be left with effects of sex, age, type of school in relation of population density, and so on, and means of comparing one school subject with another. Further, race or stock can often be suggested (in the writer's experience significantly both for Jewish and for Welsh children) by surnames, and twinship can similarly often be assumed by a study of the full names, and important facts in connection therewith also, as the writer has found, indicated. The present book hardly investigates any of these problems.

Its results are mainly preliminary in nature ; some of the more interesting are as follows :

(1) Examiners cannot work to an absolute standard, but can work to a relative one (page 45).

(2) Geography, the Group I subjects (English, History, Scripture) and Art have a much narrower peaked frequency distribution than have the subjects of Groups II and III (Foreign Languages, Mathematics, and Science) (page 49). It is interesting to compare this experience with that of Mr. B. C. Wallis on Free Place Examination English, the latter maintaining that he can devise a marking schedule in this case that will spread the marks in the fashion which the modern examiner desires.

(3) Latin is presented by a large number of ill-prepared candidates (page 53 : this explanation is suggested for the particular type of distribution—one involving a bulge on the left hand slope—that is found, but it appears that the " syllabus " feature referred to on page 6 (*d*) as accounting for bimodal (i.e., two-peaked) distributions may also, or alternatively, be at work).

(4) Compensation steadies the pass and credit pass percentages (page 55).

(5) On the average, girls are unmistakably better than boys in English, History, and Languages, and boys than girls in Mathematics, Chemistry, and Geography (page 59 : note that in H.S.C. the boys add History to their list of successes —page 78).

(6) There is greater variation among boys than among girls (page 63).

(7) Only one girl in eight entered for the Group IV, domestic subjects (page 85).

In connection with the question of age and success in examinations one or two points are worthy of comment. We know that :

(1) The older candidates in the secondary school entrance examination are often able to enter in larger numbers* ;

(2) In any one form of a school the younger will gradually tend to work their way towards the top ;†

**See* THE FORUM OF EDUCATION, November, 1928, pages 271-272, and this number, page 28.

†*See* THE FORUM OF EDUCATION, 1925, " The Correlation with Age of Arithmetic Class Marks."

(3) In parallel forms the lower form gradually accumulates the bigger proportion of older pupils ;*

Is it true, in the S.C. examination, where the data available† give only the average age of the form, that the younger candidate has the greater average mark ? Such material as the writer has collected in the course of his experience as assistant S.C. examiner suggests that for the first six months above the youngest form-average-age the average mark of the forms gradually falls, as might be expected from the above, and then for the next twelve months rises again, as would probably occur if these older candidates are having their second try. Both sexes exhibit these features. Bearing in mind then the effects of differing ability, the lengths of the pre-S.C. secondary school life and its difference for boys and girls, and the possibility of second shots, it is interesting to attempt to interpret the following facts recorded by Dr. Crofts : (1) S.C. boys are on the average seven months younger than S.C. girls, and (2) roughly equal numbers compete ; (3) H.S.C. boys are on an average four months younger than H.S.C. girls, and (4) about four boys sit to three girls. It would be valuable if Dr. Crofts could indicate his interpretation of all these facts in relation to one another.

One or two points arise by way of criticism. The first is a minor one. Is the meaning‡ attached in the book to " skewed to the left " uniform ? In connection with these skewed distributions it may be noted :

(1) That there is no reference to the effect of too great or too little time for working through an examination paper ;
(2) That it would be of interest if Dr. Crofts could let us have the equations to the distributions obtained practically (page 72).

The second point arises out of the reference to " allied subjects " (page 48). Here, anyway, the S.C. statistics could tell us something. Is there what Spearman would call a group factor ? Is the correlation between, say, two subjects of Group I (e.g., English and History), or of Group II (e.g., Latin and French), or of Group III (e.g., Mathematics and Botany) any greater than the intercorrelation of any random pair of these subjects, say, Latin and Mathematics ? Are the correlations the same for the two sexes (page 62) or for all races.

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*See THE FORUM OF EDUCATION, November, 1928, page 270.

†The examining bodies might consider the desirability, in view of the importance of the age question, of recording the age of each candidate : compare, in this connection, the remarks of the Board of Education in their recent pamphlet on Free Place Examinations, page 77.

‡Pages 6 (*a*), 6 (*b*), 21 (foot), and 52 (*a*) do not seem compatible.

Dr. Crofts gives no suggestion that these questions have been investigated. Yet he has the material that can answer the question and probably no one else in the country could do it so well. It would be worth while spending some time and money on a Hollerith or Powers tabulation, and some calculation on these points. If Spearman and his school are right it seems that the Group system as applied to S.C. examinations is in large part unsound ; practical teachers are inclined to think that probably there are special factors common to each group. Dr. Crofts' data could probably answer definitely.

As for the varying inter-correlations between subjects for different ages, sexes, and races, some data that the writer has noted suggest that some curious results may be anticipated. In the Algebra papers, e.g., of one year, he grouped his sample of examinees into four classes : (1) Girls (250), (2) Boys Special X (60), (3) Boys Special Y (200), and (4) Boys Other Z (300). The tables are too extensive for publication here, but can be summarized to bring out this one point as follows : Considering the mode of each group, that is, the commonest mark (the mode giving one way of representing the general tendency), we have :

Algebra, Part A.—Mode for Girls and for Z was the same, and in both cases much less than that of Y.

Algebra, Part B.—Mode for Y and Z is the same, both much less than that of Girls.

In the Algebra paper, parts A and B were intended to test different abilities. This they seem to do. But if Part A primarily tests " mechanical ability " or is one that gives the weaker candidates a chance (as it seems to as Girls and Z have the same mode and similar distributions), why should not these candidates react similarly to Part B, where instead X and Y have equal modes and similar distributions, both different from that of Girls ? This is just one question of the many that clamour for expert statistical analysis : it is to be hoped that Dr. Crofts will be able to help in advancing knowledge in this direction. In the meantime, may we recommend his little book to the notice of all our readers ?

FRANK SANDON.

Book Reviews.

Practical Psychology for Students of Education : by Charles Fox, M.A. (London : Kegan Paul, Trench, Trubner, and Co., Ltd. Pp. 180. 7s. 6d. net.)

In the hands of the author, who is in an enviable position, this book is doubtless a valuable text-book to an excellent course of practical psychology for " students of education." It covers a full session's course of two hours a week in the laboratory, supplemented by out of class work amounting to at least two other hours a week, and, we presume, also by a suitable course of lectures on psychology.

Those who are expected to deal adequately with psychology in a course of ten lectures to teachers in training and those also who in addition are allowed to add a course of ten laboratory periods to the lectures will put down the book with a sigh. The first will feel again the hopelessness of their task ; the second, maybe, will pick it up again and find experiments to try out as alternatives to one or two of their own much shorter course. It is possible they may even be tempted to retain only their own method of dealing with the work of Part II—Statistical—*in one lesson*, and for the other nine lessons make one selection from each chapter, leaving the students to cover the remaining ground by reading. The chapters of Part I, which contain in all twenty-eight experiments, are on sensation and perception, habit formation, mental imagery, memory, suggestion, reasoning and knowledge tests, appreciation tests, effects of training, mental fatigue.

The author is among those who consider that psychology for teachers should be " educational psychology." This raises the difficult question of how far it is possible to study " applied science " without a groundwork of " academic science." Possibly it is a mistake to endeavour to equip all teachers to carry out psychological investigations in education. Possibly, instead, a broad knowledge of general psychology should be given to all teachers while a few only deal exhaustively with the subject and finally specialize in its application to education. This would seem to be the view of those psychologists who, when grudgingly given a few hours of the time of education students for practical psychology, give them a short selection from their full laboratory course for science students.

The crowded life of the teacher in training has set its mark even on this book, for the author, compelled to pick and choose, has confined the work of the course to quantitative exercises, leaving the qualitative work to " be performed by individuals at their leisure " (page vii). But while giving precedence to objective measurement the importance of the subjective factor in psychology is stressed. " In psychology there is no such thing as a stimulus of a purely objective nature ; since every stimulus is a stimulus to some person. . . . An essential part of every psychological experiment is the record of . . . . . introspections. Without them, *pace* the behaviourists, there is no psychological record " (page xiv).

In Part II—seven chapters—statistical work is presented in readable form. We fear, however, that the average student will make very little of it without considerable assistance, and doubt the wisdom, in a course of this nature, both of covering so much ground and making a separate part even though this " part of the book is intended to be worked concurrently with the experimental portion " (page xvi). The average student can best be led to take an interest in and learn the essentials of statistical methods when they arise from actual class work. The normal curve, for example, can be dealt with from the student's own figures obtained by the method of mean error and similarly the ogive curve from his results in a satisfactory use of the limiting method.

This again raises the question of how far a quantitative course should be framed to teach methods of measurement and how far to elucidate particular

problems. The author has chosen to subordinate the teaching of method to the elucidation of problems, and in consequence has been led to write two parts and to describe them as "experimental" and "statistical"—an unhappy contrast. Our own experience is that a first laboratory course of qualitative work interspersed with easy work on the psychophysical methods is a necessary introduction to adequate treatment of the methods of measurement used in psychology, and the fact that the *constant* method has been entirely omitted by the author would seem to indicate that the qualitative scheme on which he has built a quantitative course has proved too refractory a foundation.

To sum up, we are doubtful if it is desirable that every teacher should be compelled to work so many statistical exercises even when they are "selected as far as possible from material having an educational bearing" (page viii), but consider Part I, supplemented by suitable qualitative work, an excellent course of practical psychology for education students able to spend the necessary time in the laboratory. We hope, moreover, that the fact that a practical course of fifty-six hours is possible at Cambridge will help to lead some other universities and training colleges to reconsider their attitude towards psychology in the curriculum of students of education. R.J.B.

The Philosophical Bases of Education : by Robert R. Rusk, M.A., Ph.D., Principal Lecturer in Education to the Glasgow Provincial Committee. (University of London Press, Ltd. Pp. 205. 5s. net.)

The author begins with a chapter designed to show the need for a philosophical consideration of educational problems, proceeds to discuss the claims, or rather to show the inadequacy, of naturalism and of pragmatism, gathers up, partially from the threads of his discussion, a statement of the idealist position and by means of an historical presentation of idealist views, offers an interpretation and statement of education from the point of view of idealism.

The earlier chapters are, perhaps, not without a touch of that dogmatism which, in Dr. Rusk's opinion, has now passed from educational thought. To condemn (within a half dozen lines) Dr. Percy Nunn's views upon the aim of education as sceptical and his conclusions as "quite illogical" may do something to convince the general reader of the need for a philosophy of education, but it may, in turn, make him rather sceptical as to where philosophy and logic are likely to be found. Dr. Rusk seems to imply that the idealist has first claim to certain concepts which advocates of scepticism, naturalism, and pragmatism have no right to introduce into their educational systems. Dr. Nunn, for example, is accused of inconsistency in smuggling creative activity and a cultural environment into a biological presentation of education. Pragmatism, too, is admonished for attempting to combine the methods of naturalism with the conclusions of idealism, and the exposition, by an apparently natural transition, passes to the "contradiction inherent in American life," the combination of industrial efficiency and material success with idealistic tendencies.

The latter part of the book is a readable and fairly full account of the application of idealist principles to education. Socrates, Plato, Aristotle, Rousseau, Kant, Fichte, Hegel, Froebel, Pestalozzi, and Gentile are brought under review, the author endeavouring to maintain the thesis propounded in the earlier chapters that "freedom in education implies an idealistic philosophy." Unfortunately there is no very clear picture of what is meant by idealism or by freedom. With some qualifications and reservations Rousseau is held to be the father of German idealism. Gentile overshadows Montessori, who is dismissed with a passing reference or two. Is this because of her faith in environment, or is it due to her view of freedom, or to her supposed divestment of philosophical pre-conceptions ? W.J.M'C.

The New Psychology of the Unconscious : by C. W. Valentine, M.A., D.Phil., Professor of Education in the University of Birmingham. (London, Christophers. Pp. vii+162. 4s. 6d. net.)

This interesting book by the Editor of the FORUM is the second edition of a work published in 1921 and reprinted the following year under the title of " Dreams and the Unconscious." In the present issue the chief additions are the closing chapter dealing with the influence of the unconscious upon normal individuals, a discussion of the views of Adler, of the concept of the libido, of general or specific energies, and a further treatment of such topics as the father complex. The revised edition is not only a larger and more useful, but a more attractive book : publisher as well as author has contributed to this result.

Dr. Valentine has the gift of writing clearly, simply, concisely, cautiously, and convincingly. The present book is a model of exposition : its avowed purpose is to present the new psychology as a development of the old. It is in the focussing and re-interpretation of the diffuse and at times conflicting views of the psycho-analysts that its main claim to originality lies. The success of the author's work is to be measured by the simplicity of his treatment ; only those who have attempted to relate the newer views to those of the orthodox psychology will fully appreciate the skill with which it is executed.

The main points emphasized in Dr. Valentine's treatment are the distinction of various types of repression ; the basing of repression upon a general tendency of the mind to turn away from the unpleasant, the interpretation of unconscious repression as a habit, the connection of non-deliberate repression with the process of learning by the method of " trial and error," the explanation of displacement of feeling in terms of " short-circuited " associations, the emphasis of the complexity of human impulses and the consequent refusal to accept any specific type of repression as the main or only source of mental conflict, and the repeated insistence upon the testing of theories gleaned from psycho-analytic investigation by a reference to " normal " individuals. The discussion of various views, while not making any pretence to be exhaustive, gives an admirably critical introduction to the important points of the new psychology : its clarity, caution, and sound common-sense will go a long way to make many who are repelled by the matter and the methods of psycho-analytic exposition discriminating students of the operations of the unconscious. It has many obvious connections with education, but Dr. Valentine has very wisely refrained from limiting his discussion to any special province of his subject. W.J.M'C.

The Behaviour of Young Children in the Same Family : by Blanche C. Weill. (Harvard University Press. Pp. 220. 13s. 6d.)

Dr. Weill is psychiatrist at the Whaley Memorial Home, Flint, Michigan, and has used her special opportunities to study the case histories of seventeen different families, from which children came to the clinic for treatment. These detailed studies are full of interest and form a valuable contribution to the study of the influences of family environment, and the variability of such influence according to the position of the child in the family (eldest, youngest, etc.) and to other factors which produce, for the different children, largely different environments. Dr. Weill is undoubtedly able to show how the supposed influence of heredity may be exaggerated and how great changes may take place in individual children when re-adjustments are made within the family. But the evidence is by no means inconsistent with the position that heredity is at least as important a factor as environment ; indeed, some of the case histories themselves show how individual differences in a child themselves determine the different treatment accorded to them, and so in themselves partly determine their environment. C.W.V.

Changing Conceptions of School Discipline : by Pickens E. Harris, Ph.D., Assistant Professor of Elementary Education, University of Pittsburg. (The MacMillan Company. Pp. ix+384. 8s. 6d. net.)

The discussion in this book, which is one of The Modern Teachers' Series, deals mainly with the theoretical aspects of control, the writer promising, as an outgrowth of the present study, a " companion volume " dealing explicitly with the " educational bearing of control and the practical engineering function of the teacher." With the exception of a very brief reference to early views the writer confines himself to the conceptions of school discipline current in American elementary education during the past hundred years. A full and interesting account is given of the steps by which the synthesis of discipline and learning has been attempted. The material which the author uses in his presentation of early American views will be read with especial interest. Many of Professor Dewey's doctrines will be more readily and clearly understood from the historical background in which Dr. Harris presents them.

Beginning with a clear sketch of the older views of corporal punishment, with their so-called religious and political sanctions, Dr. Harris traces the effect of Pestalozzi's attempt to win the pupil's confidence and love ; he shows how Froebel's ideas of self-activity affected the relation of the teacher to the pupil ; he traces the effect of the Herbartian movement on the problem of control. Finally, he deals with the steps by which self-government and self-organized group-work prepared the way for Dewey's idea of the school as a vital social institution in which the acquiring of information and growth of character go hand in hand.

The analysis of the historical material is often suggestive and stimulating. The method, however, occasionally leads to rather tiresome repetition and re-discussion of topics already partially reviewed. While adhering to the general plan of limiting the discussion to American schools and views the author might have considered the bearing of some of the more strictly individual methods (such as the Dalton Plan), and of the psychology of the unconscious upon the problem of control. Perhaps individual methods are thoroughly un-American and the " inferiority complex " is unknown in the American elementary school. W.J.M'C.

The Basis of Sensation : by E. D. Adrian, M.D., F.R.C.P., F.R.S. (Christophers. Pp. 122. 7s. 6d.)

It was a happy inspiration to entitle this book "The Basis of Sensation," for although the subject matter deals with physiological experiments designed to throw light upon the nature of the sensory messages from the sense organs to the brain, the conclusions reached are of such a fundamental character that they will interest physiologists and psychologists to an equal extent.

A stimulus to a sense organ to be effective must have a certain degree and a certain rate of change, and the resultant impulses recur at regular intervals, their frequency varying with the strength of the stimulus. The impulses in the sensory nerves are of the same type as those found in motor fibres or in the isolated nerve, but it is found that the various receptors exhibit different rates of adaptation corresponding with the types of reflex action which they produce; thus the sense organs may be classified in the same way as Sherrington's " postural " and " phasic " reflexes.

The impulses produced by a pain stimulus are of the usual type and frequency, and there is some evidence that the discharge must have a certain duration and intensity. The author discusses the distinction between epicritic and protopathic receptors drawn by Head and Rivers on the basis of their nerve regeneration experiments, but for the moment he suspends judgment on this vexed question.

Integration of the sensory message takes place somewhere in the central nervous system, alterations in sensation being a fair copy of the variations in the excitatory process in the receptor. Concerning the mechanism of production of a change in the content of our mind by sensory messages we are still in the dark; nevertheless, Dr. Adrian's brilliant researches have brought us a step nearer to the solution of this problem. I. DE B.D.

Emotions of Normal People, by William Moulton Marston. (Kegan Paul, Trench, Trubner, and Co., Ltd., London. 8vo. Pp. xiii + 405. 18s. net.)

In this volume Dr. Marston puts forward a theory of emotion based, among others, upon his well-known experiments on systolic blood-pressure, as well as on a large number of clinical observations. His objective analysis of behaviour, corroborated by the data of his tests, has led him to discard as useless and misleading the terms commonly employed to denote emotional states; and in their place he proposes to substitute four heads under which primary emotions may be classified. These are "Dominance," "Compliance," "Submission," and "Inducement." Combinations of these primaries give rise to such compound emotions as "Desire," "Satisfaction," "Passion," and "Captivation." Marston's terms indicate the view he takes as to what an emotion is. The conative aspect of the state is not clearly distinguished from the effective; and, indeed, his underlying psycho-neural hypothesis lays stress upon the former rather that upon the latter aspect.

The author distinguishes two sorts of cause, mechanistic and vitalistic, as interacting. Consciousness is a physical force of vitalistic type to be identified with energy generated at the synaptic junctions between neurones. These anatomical units he proposes to call Psychons. Synaptic energy in afferent nervous tracts (sensory centres) is, or accounts for, sensations, in connector tracts for thoughts, and in motor centres for motor or affective consciousness. Marston terms the vitalist-type cause at the motor Psychons "motations," still further emphasizing the conative aspect of emotion, though he does not distinguish a conative consciousness as such.

Primary feelings and emotions become integrated through antagonisms and facilitations between two sets of motor impulses, those namely of the "Motor Self" (continuous and tonic), and of "Motor Stimuli" (of phasic reflex origin).

The theory of emotion presented, and particularly the physiological hypothesis, is worked out in very great detail; but the reader is helped by admirable synopses in which the points developed in the text are summed up, and there is an excellent index.

Performance Tests of Intelligence: by James Drever and Mary Collins. (Oliver and Boyd. Pp. 52. 5s. net.)

This little book gives a description of the performance tests on which the authors have previously reported, together with instructions for their carrying out, and norms based on the examination of 200 deaf and 200 hearing children. From these norms the authors conclude that there is little retardation in intelligence (tested apart from language) among the deaf.

The fact that these tests do test any kind of intelligence has to be inferred from the nature of the tests, not from correlation with estimates of intelligence; and some no doubt are dependent on highly specific abilities, as for example the visual memory of spot patterns. It is good, however, to have attention paid to a type of intelligence which is apt to be overlooked in the ordinary tests of intelligence.

The Unconscious in Action : by Barbara Low. (University of London Press. Pp. 226. 5s.)

It is eight years since Miss Low published her first book on psycho-analysis, and during these eight years changes have been occurring. Psycho-analysis has not stood still, and Miss Low seems to have progressed too. The differences are perhaps not very obvious, but none the less they are there. There is a curious new possibility creeping in that the other fellow is perhaps after all not a complete fool. Here is an example : In 1920 we read " The ' Freedom ' so often discussed by would-be reformers (Eugenists, Montessorians, and a host of others) is worthless, since based on an ignorance of the child's psychic situation with which they profess to deal, and, above all, of their own psyche." But in 1928 it is " Since the Montessori method has proved its value in various directions, it would be worth while if the psychological foundations of it could be further investigated by both supporters and critics."

Another subtle change in the Freudian standpoint is shown by the quotation on page 29 from one of Freud's latest writings : " Not only the lowest but also the highest in the Ego may be unconscious." It is not so many years since the leader of the Freudian school in this country poured ridicule on this contention of Jung's. Now it is reverently served up as Freud's discovery.

On page 67 we have some very just and much-needed comments on " Free Discipline." The Scout movement comes in for commendation, and on page 164 there are some very pertinent remarks about the " no-nonsense " schoolgirl. A passage on authority deserves quotation : " On the other (side of the problem) is the spontaneous inherent need of the child for authority and guidance—a very much stronger demand than is imagined by many present-day educational reformers " (page 81). We cannot recall any passage in Miss Low's previous volume that was pitched in this key.

Another interesting feature is to be seen in a couple of references to creation . . . " Creative energy " . . . " Highest flights of artistic and spiritual creation." The highest Freudian authority has assured us that everything that masquerades as creation turns out to be mere transformation. It has always seemed to the present reviewer that of all Freudian dogmas this repudiation of the creative factor is the one that most needs to be challenged. And now we have Miss Low talking of spiritual creation quite politely—almost reverently !

As a good Freudian the authoress passes over type-psychology as meaningless or unimportant (page 52). As far as the Viennese school is concerned, Jung is but a voice crying in the wilderness, and yet one feels that " The Unconscious in Action " is not a subject that can usefully be treated without reference to type and temperament. All through the book the desire to shock the ordinary reader is less apparent than in its predecessor, but the Freudian note of dogmatic assurance recurs fairly frequently. For instance, on page 111 we have a brief statement of the well-known Freudian theory of remembering and forgetting. It is served up with no reservation, no uncertainty—just the plain " nothing-but " psychology that Freud gave us twenty years ago. Again, on page 197, criticising the isolation treatment of the troublesome child in the Montessori school, Miss Low says : " This isolation, whether in the same room or in a separate room, can symbolize one of the most dreaded terrors, a castration-punishment, far more intense as regards the effect it produces than a scolding or possibly a beating." To the simple-minded teacher this phenomenon is a straightforward expression of the herd-instinct. To interpret it as the author does may sometimes be correct. Are we meant to infer that a castration-fear is usually or always present ?

There is one characteristic that pertains to both Miss Low's books. It is her somewhat devastating use of the English language and idiom. For

instance, on page 178 there is a sentence which is offered to teachers of syntax as an incomparable achievement in the subject-predicate line. Curiosity—and idleness—prompted the reviewer to count the words in a single sentence on page 97 : there were 111 (one hundred and eleven). For a former training college lecturer this is a notable performance. There are words that we imagine must have been coined by Dr. Brill or some of the many alien translators of Freud—" affectional " is an example. So strongly did this impress the reviewer that he would venture to suggest that next time Miss Low persuades Professor Nunn to write a foreword—and such a characteristic gem at that—it should be printed at the end of the volume (and presumably called an " afterword "). There are few authors whose style can stand juxtaposition with Professor Nunn's, and Miss Low is not one of them. There is a marvellous index, apparently compiled by an uncured compulsionist patient.

However, the book should be of real value to educationists, as presenting current Freudian teaching in its practical applications, with less of the crudity and aggressiveness that have in the past so frequently defeated the end in view. H.C.M.

The Child in Primitive Society : by Nathan Miller. (The Library of Educational Psychology. Pp. 307. 12s. 6d.)

The parts of this book which will probably be of greatest interest to students of education and of child psychology are the middle chapters, dealing with the ordinary life of early childhood among primitive peoples, and with primitive education through suggestion and imitation, through specific training, and through the processes of " initiation." Professor Miller has collected a vast number of facts of great interest under these headings. Particularly striking are those which refer to the examples of independence of mere infants of a few years of age : the Ainu thinks his child " no good as an Ainu " if he cannot look after himself at a year and a half. The combination of intensely severe physical discipline of the body, to cultivate endurance and hardness, with at the same time the relative freedom from corporal punishment as a corrective, is also specially suggestive. The author has gleaned his information from a very wide range of authorities and has undoubtedly produced a very useful contribution to studies in education. It is regrettable that the many references are given in such an inconvenient form. The reader must constantly remember the number of the chapter he is reading if he is to turn up the right set of notes at the end of the book, these sets of notes not having the appropriate chapter headings. C.W.V.

Understanding Human Nature : by Alfred Adler. (Allen and Unwin. Pp. 286. 12s. 6d.)

This is a translation of lectures given by Adler to audiences at the People's Institute in Vienna. The book is therefore of a more popular type than most of Adler's other writings and the exposition is less obscure than usual. It probably, therefore, gives the best introduction to Adler's views on psychology. It stresses, as we should expect, the supreme importance of the social life of the child in its earliest years. Indeed, Adler goes so far as to suggest that, granted a knowledge of the social environment and the reactions of a child of a few months old, one can prophesy his character. He protests (surely wisely) that the child's love is normally " directed towards others and not, as Freud would say, upon his own body." Adler's views, however, are vitiated as it seems to me by the excessive place given to the desire to dominate as an innate tendency. Consequently, he is inclined to oversimplify the analysis of character and conduct and to divide human beings into two definitely separated types. Nevertheless, no one could read this book without finding much that is deeply suggestive for the understanding both of children and adults. It is regrettable that an index is not added. C.W.V.

Animal and Human Conduct, by W. E. Ritter, with the collaboration of E. W. Bailey. (George Allen and Unwin. Pp. 339. 15s. net.)
Professor Ritter is primarily a zoologist, and so, as one would expect, is stronger on the biological side than on the psychological. But the author, while not professing to deal with the psychological problems raised in a detailed way, is very clearly aware of the bearing of his facts upon psychological problems, and sound when he does enter into psychological discussions. The result is a book containing a great deal of suggestive material for the student of psychology. The most characteristic parts of the book are those which deal with maladaptive activities in both animals and humans, of especial interest being those chapters which reveal the clumsiness of instinct in monkeys, apes, and low-cultured human beings, and the irrationality of much instinct-driven conduct even among " high-cultured " men.

Difficulties in Child Development : by Mary Chadwick, B.R.N., F.B.C.N. (Allen and Unwin, Ltd. Pp. 414. 15s.)
Miss Chadwick, who has had very varied experience as a nurse and later in psycho-analytic work, writes chiefly for parents, teachers, nurses, and welfare workers. The book is a blend of popular exposition of much of Freud's psychology as applied to children, together with practical hints. The psychological analysis is at times uncritical and incomplete, and many statements are made dogmatically without any evidence being offered. But the treatment as a whole is broad and at times suggestive.

The Psychology of Childhood : by Mary Scharlieb, D.B.E., M.D., M.S. (Lond), J.P. (Constable and Co. Pp. 194. 6s.)
This book will be of real service to those who have the care of young children. It is written with the utmost simplicity and clearness, and yet as one reads it one is conscious all the time of Dr. Scharlieb's wealth of knowledge and experience. It is full of practical advice from a medical and moral point of view for those who have to deal with normal or abnormal children.

Studies in Hereditary Ability : by W. T. J. Gun, F.R.Hist.S. (George Allen and Unwin, Ltd. Pp. 288. 10s. 6d.)
While making no pretence to be a comprehensive treatise on heredity, this book traces the appearance of very varied mental traits in groups of related families. Wit, wisdom, and wickedness, beauty and athletic prowess, intellect, literary and artistic ability are all exemplified as appearing among generations of relatives—successive or contemporaneous. There is not much by way of scientific treatment, but an interesting collection of facts has been set forth.

An Introduction to Psychology : by Susan S. Brierley. (Fourth Edition, revised. Methuen. Pp. 160. 5s. net.)
In the new edition of this useful book Mrs. Isaacs, besides revising the chapter on the " Content of the Unconscious " has added an appendix indicating the tendency of certain modern schools of psychological thought, our only criticism of which is that it is all too short ; we could wish that the author had given us twenty pages instead of two.

Modern Biology : by J. T. Cunningham. (Kegan Paul, Trench, Trubner, and Co., Ltd. Pp. 244. 10s. 6d.)
The author brings under critical review the usually accepted theories of various aspects of evolution, and maintains that some of them cannot be reconciled with some of the more recently discovered facts of biology. The book is of a more philosophical type than most treatises on biology and justifies its inclusion in the Library of Psychology, Philosophy, and Scientific Method. It is both informative and thought-provoking.

Talks to Teachers and Parents : by Homer Lane. (George Allen and Unwin. Pp. 197. 5s.)

Homer Lane and the Little Commonwealth : by E. T. Bazeley. (George Allen and Unwin. Pp. 200. 7s. 6d.)

The Story of My Life : by Rudolf Steiner. (The Anthroposophical Publishing Co. Pp. 340.)

In 1925 Rudolf Steiner and Homer Lane died. Both had devoted their lives to truth as they saw it, and to service ; each had won profound appreciation and love, and the bitterest and most unscrupulous hostility, for both were figures one could not neglect. Conventional circles regretted that these men " could not see their way to join the normal educational movement," and Lane was eventually weighed and dismissed by a court of law that might as well have tried Einstein for his mathematics. It was this last blow which, as Dr. David remarks in his introduction, told so intimately on Lane's health, and the official world in September, 1925, was relieved at last of an " enemy " who succumbed to pneumonia.

Not that Lane admitted " enemies." Few men have based their work upon such a creed as his. He fought for the birthright of men to love themselves and their fellows simply and without conflict, and he based his practice and teaching on the principle that those folks would be normal, whereas we are abnormal—merely average. " If there were no repression . . . man would be monogamous and fully expressed thereby " ; a mere phrase ; " to say of our faults, ' After all, it's only human nature,' is an insult to human nature ; human nature is good "—a pious sentiment. But Lane, for all his own impishness and other faults, lived utterly up to his creed ; his trust in the young enabled him to throw the reins upon their neck, where one who hated or distrusted them would have failed. It was impossible to defeat his love, and that is why he healed ; he saw no meaning in the word " evil " ; to him crimes and perversions were, like every common bush, " afire with God." But people prefer to condemn, and it was upon this rock that all such efforts as his break down ; Goethe's " Harzreise im Winter " tells the same tale of the fruitlessness of love upon those whose faith is utterly perverted :

Ach, wer heilet die Schmerzen
Dess, dem Balsam zu Gift ward ?
Der sich menschenhass
Aus der Fülle der Liebe trank ?

Nevertheless, he worked out his creed on the intellectual side in commonplace detail as exact as its base was religious. When education catches him up, it will be amazed to see how simple the basis of his confusing and paradoxical brilliance really was, and how loving the heart that dared prompt it. Of the two books published in his memory, one is by a colleague of his at the Little Commonwealth, a devoted but rather commonplace rendering of him and his life there, but well worth reading for many a detail ; and the other from his own mouth, and a book of the first importance. We should be fortunate if we had an autobiography of Lane such as we have of Steiner in the third book of our list, " The Story of My Life," better designed, it appears, for the reading of those who already have studied and felt the depth of the thoughts and dreams of that commanding and lovable figure. It must be sufficient here to place him beside Lane among those whose creeds one may regret, but whose example of sincerity and courage must remain always the hope and true pride of European education. E.J.R.

The Hogarth Lectures.

A Lecture on Lectures : by Sir Arthur Quiller-Couch. (Pp. 48. 2s. 6d.)
Tragedy : by F. L. Lucas. (Pp. 158. 3s. 6d.)
Studies in Shakespeare : by Allardyce Nicoll. (Pp. 164. 3s. 6d.)
The Development of English Biography : by Harold Nicolson. (Pp. 158. 3s. 6d.) The Hogarth Press.

These first four volumes give promise of an extremely attractive and useful series. The introductory volume by " Q " is slight ; but it breaks somewhat new ground in exposing the evil done by lectures not merely to the audience, but to the lecturers themselves. Mr. Lucas provides an illuminating commentary on Aristotle's " Poetics " : it is sensible and unpedantic, qualities rarely found in the exegesis of Aristotle. Professor Nicoll's work on Shakespeare is too well known to need any comment here : these studies of Hamlet, Othello, Macbeth and Lear are admirable. Lastly, Mr. Nicolson is as entertaining in these lectures as in " Some People." His distinction between " pure " and " impure " biography may be singled out : the former is defined as " the truthful and deliberate record of an individual's life written as a work of intelligence " ; the latter is " either untruthful or unintelligent, or concerned with considerations extraneous to its own purposes." Of Mr. Nicolson's survey, the most interesting parts are those dealing with Boswell, Gosse's " Father and Son," and Mr. Lytton Strachey. Boswell is our finest example of " pure " biography ; neither Gosse nor Strachey, for all their excellence, is " pure." There is a final suggestion that, as biography becomes more psychological, as the need for complete rather than selected detail increases, it will cease to be artistic ; thus " pure " biography seems doomed. Yet this loss may not be serious : " literature, by devoting itself to ' impure ' or applied biography, may well discover a new scope, an unexplored method of conveying human experience." F.A.C.

Thomas Arnold : by Rev. R. J. Campbell, D.D. (Macmillans, 1927. Pp. xiv+212. 6s.)

This volume on Thomas Arnold, by Dr. Campbell, is a notable addition to the " Great English Churchmen " series. As the aim of the series is " to suggest the significance of the man in the age in which he lived and in the movements within the Church with which he was concerned," the author has to study his subject from a slightly new angle, and to emphasize questions of churchmanship, belief, and social thinking. By a good historical survey, popular rather than learned, Dr. Campbell summarizes the religious forces and movements of the early 19th century, and attempts to put Arnold's religious work into focus, so as to give us a better conception of its real meaning and purpose. But for good or evil, the forms of the controversies which Arnold aroused do not seriously interest us now, and the author's discussion lacks grip. Dr. Campbell is estimating a Victorian ; his moralizing is also Victorian.

The appeal of Dr. Arnold lies not in his works, but in his work. That work was done at Rugby. To evaluate that work is not Dr. Campbell's task. Yet he conveys the impression that he has not fully realized what Arnold accomplished in the educational sphere. The statement " He was not in any sense an innovator ; he left the English public school system exactly where he found it with one notable exception," requires far more qualification than a clause about the head master's stress on religion and morals. Dr. Campbell wants to stress Arnold as a great Churchman with an extremely critical spirit, and so reverse the popular judgment that Arnold's real greatness lay in his schoolmastering. He does not adduce sufficient evidence. Though the book is valuable for readers interested in the religious controversies of the period, for students of Dr. Arnold there is nothing new. I. J.

The Approach to History: by F. Crossfield Happold, D.S.O., M.A., Senior History Master, the Perse School, Cambridge. With an Introduction by G. P. Gooch, D.Litt., F.B.A. (Christophers. Pp. 99. 3s. 6d.)

Mr. Happold, of the Perse School, Cambridge, has published a book on methods of teaching history to twelve-to fourteen-year-olds, which is to some extent revolutionary in its underlying principles. The originality of his attitude lies in his frank acknowledgment that even up to fourteen-plus, our pupils are not ready for real historical study, if we understand real historical study to include the weighing of historical evidence, and the forming of considered historical judgments on general movements, careers, and policies. It is, perhaps, not very clearly understood by the man in the street, how constantly in our school history essays, questions, and examination papers we do call upon callow children to make such judgments, or at least to learn to repeat the judgments of the history-master and the school text-book. It is because teachers of history are only too familiar with this practice, that Mr. Happold's views will strike them as refreshingly heterodox.

Mr. Happold rather surprisingly takes it for granted that his boys will have their first lessons in history at twelve years old. This is not a condition of affairs which applies to the majority of schools in Great Britain. But, in view of the fact that our elementary school pupils are very soon to make a fresh start in all school subjects at eleven-plus, in secondary and post-primary schools, this writer's attitude should be all the more helpful to those teachers who are to initiate our children in this fresh start.

Mr. Happold expresses his aims in teaching history to adolescents as follows : " It is the first task of the teacher of history to show the boy that history is interesting, and to arouse the historical imagination of his pupils. The boy is not yet capable of studying history critically or scientifically, he can as yet only realize it imaginatively and poetically, as an adventure, a pageant, an epic poem. What better medium can there be for this arousing of the imagination than the study of the Adventure of Man ? . . . He will watch Man's long struggle from barbarism to civilization . . . and will realize that history is not merely the tale of kings and ministers, not merely the annals of one land or one people only, but the story of the human race, of an adventure of which he himself is a part and a continuation. . . . His later studies of a part of history will be the more vivid and fruitful since he has first seen the outlines of the whole."

Although Mr. Keatinge, at least, would take exception to the sweeping statement that the normal boy of twelve is not yet capable of studying history critically, still in the main that statement is justified. Historical judgments cannot be arrived at merely by balancing one documentary account against another. An historical judgment of any value must be broadbased upon individual experience of men, motives, and affairs, in the adult world of to-day. From this point of view, the meagreness and narrowness of a twelve-year-old's experience of human life make him incapable of forming independent historical judgments. But psychology corroborates Mr. Happold's opinion, that the twelve to fourteen-year-olds have sufficient experience of family and community life to enable them to reconstruct from that basis, in imagination, the concrete conditions of life in a past age, to be fascinated by the drama of man's adventurous undertakings, and to appreciate something of the glamour or the tragedy of the times. And psychology is with Mr. Happold in his bold claim that world history in its widest sense can be studied by the adolescent with profit and delight. For adolescence is the moment when the boy's social instinctive interests suddenly widen out, and enable him to catch his first glimpse of mankind as a whole, when the problem first arises in his mind as to how the nations and the races have come to be what they are.

But Mr. Happold is most obstinately heterodox in the whole-heartedness with which he sticks to a concrete and imaginative presentation of history throughout the adolescent years. Here, again, he shows appreciation of the psychological phenomenon that the boy's interests widen at this age much more rapidly and change more fundamentally than his powers of thought. "The mind of the boy of twelve possesses little capacity for grasping abstractions. He can realize with ease a concrete image, a vivid picture of a person or an event. . . . Much of our history teaching of the young boy fails because it is too intellectual. . . . The appeal through the brain must of course be utilized, but to that appeal must be added the appeal through the eye and the hand." The writer's use of psychological terms is technically inexact, but his observation of boy-psychology is sound. Between twelve and fourteen our pupils first begin to make use of the higher types of conceptional thought. But the type of thinking which still predominates in these years is that of the imaginative level—thinking in pictorial images.

With the courage of his convictions, Mr. Happold shows how he makes it clear to his boys that all the teaching and study in their history lessons is to be done in order that they may make illustrated time-charts, pictorial maps and diagrams, symbolical drawings, imaginative compositions and spirited ballads, which will body forth the pageant of man's progress through the ages. Teachers will welcome the practical details which Mr. Happold supplies, as to how to carry out this kind of handiwork, though these devices of method are not in themselves new. Other teachers have used them to introduce variety into history teaching, which was in the main of the stereotyped, verbal type. Few teachers would have the courage to make such activities the central purpose of the history course of the middle school years. And Mr. Happold is to be congratulated upon the skill with which he gradually leads his boys on to a more exact chronological representation of the past, to the use of fewer pictures, and more tabular diagrams and written notes—a progress which corresponds to the adolescent development of the boys' mental powers.

Those who are planning the curricula of our new post-primary schools, and those who look forward to teaching in them, would do well to ponder the significance of Mr. Happold's reading of the needs and powers of the adolescent, in relation to school history teaching. J. G. MacG.

An Adventure with Children : by Mary H. Lewis. (The Macmillan Co. Pp. viii+250. 6s. 6d.)

In this book the story of the Park School of Cleveland, Ohio, is told by its principal. From small and tentative beginnings it grew to a school of 250 children, with a park of sixty acres, a primary village, and all (apparently) that heart could desire in the way of equipment and enthusiasm. Then, after twelve years, Miss Lewis fell ill—and the whole thing melted away. But one feels in reading the book that the end does not matter : the effort, the "adventure" was in itself worth while, both for those connected with it and for others who may find encouragement from the narrative. The school had distinguished friends : Dr. Dewey spend a day there (the Principal wisely kept him incognito) and later sent Dr. Decroly to visit it. The parents and trustees were stimulated into helping, financially and otherwise, by the Principal's enthusiasm ; indeed Miss Lewis gives some very shrewd advice on the management of parents. In this book little is said of the academic work, in order to stress the "adventurous" side of the school ; but we are told that in every sort of test the children were above normal. The style is in places rather too lyrical for many readers ; but, taken as a whole, the book contains much of interest and permanent value. F.A.C.

Education through Manual Activities : by A. M. Wiecking. (Ginn and Co. Pp. vi+351. 8s. 6d.)

The most striking feature about this book at first sight is the lack of relation between its exterior form and the nature of its contents. Its binding suggests a learned text-book on, say, the psychology of handwork, whereas the greater part of the book is devoted to suggestions for interesting and attractive articles which children might make, and it is intended for the use of teachers of kindergarten and primary grades. This being so, it seems unfortunate that the exterior make-up of the book is not designed to attract the class of reader for whom it is intended. Moreover, any book on handwork should, at least, make the work appear attractive, and should set a high standard of taste. There is an unfortunate lack of really tasteful drawings, and an entire absence of colour, whilst many of the photographs are very small.

The author, perhaps, sets out to achieve too much when she strives to incorporate in one volume suggestions as above indicated for miscellaneous handwork for younger children ; a section devoted to " Our Industrial Interdependence," being an approach to the study of industrial arts ; another one devoted to " The Administration of Manual Activities " including detailed precepts on class organization and methods of teaching, and also some suggestions for projects for younger children. Such an extensive programme of subject matter demands more than one volume for its adequate treatment.

The precepts on method of teaching, while thoroughly sound, appear somewhat bald and lifeless when condensed into print. Teachers probably best acquire such knowledge by spoken advice in lectures, demonstrations, and through criticism of their actual teaching efforts.

There is little of originality or inspiration here, but rather a faithful and painstaking collection of many things already familiar to teachers, and some sound if unstimulating advice. It may, however, be useful as a book of reference, giving suggestions to the very inexperienced teacher, or reviving the memory of the older teacher with regard to bright ideas once hailed with approval, but forgotten in the time of need. L.E.S.

The Child's Religion : A Study in the development of the Religious Sentiment : by Pierre Bovet, Directeur de l'Institut Jean Jaques Rousseau, translated by George H. Green, M.A., Ph.D., B.Sc. (J. M. Dent and Sons, Ltd. Pp. xiii+202. 6s.)

Child Psychology and Religious Education : A book for parents and teachers : by Dorothy F. Wilson, B.Litt. (Oxon.). (Student Christian Movement. Pp. 157. 4s.)

" The Child's Religion " is a book of scientific character, a careful analysis on certain lines of the religious sentiment in children and of its growth. M. Bovet seeks its origin in the filial sentiments " The father and mother are, for the children, his gods. But the experience of life compels the child to change if not his religion at least his God, and to transfer to a more remote being the wonderful attributes with which he in the first place endowed his parents." One of the most interesting parts is the description of this transfer of feeling away from parents in the case of certain individual children. There is no discussion of the view of Otto, who finds the specific religious interest in the feeling of reverential awe and utter dependence, and very little at all about the place which awe and fear play in religious psychology. The book is practically an essay on the theme quoted above. Bound up with it are other papers, an interesting essay on the sentiment of respect in modern education, a psychological study of spiritual unity, originally delivered as a lecture to the Swiss Students' Christian Union, and an account of the Jean Jaques Rousseau Institute.

Miss Wilson's point of view is more practical than M. Bovet's. She gives in an interesting and straightforward way exactly the kind of advice that is most sought by parents on such subjects as authority and obedience, training in worship and in morality. She is equally helpful to teachers and has sound and interesting suggestions to make on the training of memory and the use of the imagination in religious education. The book contains nothing that is strikingly original, but it is full of sympathetic observation of children and will be of the greatest use to teachers and parents. W.M.

Report of the Consultative Committee (Board of Education) on Books in Public Elementary Schools. (H.M.S.O. Pp. xxi+162. 1s. 3d. net.)

"What I wish to insist on is that studies and books are among the matters of first importance to engage your Lordships' attention in dealing with elementary schools; more important than those political, ecclesiastical, and administrative questions, which from the necessity of the case do occupy your Lordships' attention so much more." So wrote Matthew Arnold in 1871; and now at length the Central Authority has made a thorough investigation into school books. Arnold indeed never ceased to lament that the Education Department gave up (with the Revised Code of 1862) the official book list which it had issued since 1847. Such an official list has obvious disadvantages; nor, in the present state of educational publishing, is there the same need of it. The Consultative Committee prefer Local Book List Committees, with periodical meetings of a Central Advisory Conference convened by the Board of Education; these local committees should have charge of permanent book rooms, where teachers might consult the latest publications. The problem of choice of books by teachers is, however, probably easier to solve than that of persuading the less progressive L.E.A.'s to provide adequate and suitable books for their elementary schools. The present method of keeping accounts makes it impossible to separate expenditure on books from that incurred on stationery, etc.; but such figures as are quoted show great disparity between authorities; and further "it seems almost certain that the [total] amount would represent less than one per cent. of the total expenditure per child incurred in maintaining public elementary schools." It is, therefore, recommended that the expenditure on books should be shown separately in accounts, and that where (after careful scrutiny) it is found inadequate, it should be increased.

Other chapters deal with school and public libraries, with the quality and character of school books (the remarks on text-books for different school subjects contain many valuable suggestions), and with the really important question of allowing children to own their books while at school and to keep some of them when they leave. Lastly, one may add that this, like other Reports of the Consultative Committee, contains a most interesting historical introduction. F.A.C.

The Cave Man's Legacy: by E. Hanbury Hankin. (Kegan Paul. Pp. 180. 5s. net.)

As might be expected from Mr. Hankin's earlier book on "Common-sense and its Cultivation," this is a very interesting and in places lively book. Mr. Hankin makes brief excursions into the comparative psychology of animals and into the study of primitive peoples. His chapters on "Primitive Pugnacity" and "Murder as a Habit," leading up to some comments on what he regards as an instinct of cruelty, are particularly suggestive. I think, however, he is wrong in quoting the attraction that hanging and tortures have had for crowds as evidence of the cruelty instinct. The horrible may surely fascinate even if it pains us.

The New Universities : by H. G. Herklots. (Ernest Benn. Pp. 144. 6s. net.)

The sub-title of this book is "An External Examination," for the author was a student at one of the ancient universities. It is written in a pithy and, at times, satirical style, and contains a number of criticisms of the new universities, some of which are justifiable, though the author does not seem to be aware of the fact that the leaders in those universities are, as a rule, very conscious of their weaknesses. In many cases, also, he undoubtedly exaggerates the disadvantages of the university life in the great city, and, more important still, he ignores the fact that, in the vast majority of cases, the alternative to studying in one of these universities would be, not residence at one of the ancient universities but rather no university life at all. To the reviewer, who has been a teacher at several modern universities and a student at another, as well as at an ancient university, the author seems to over-estimate considerably the superiority of the latter from the point of view of the amount of social intercourse. A student at the modern university, even if in lonely rooms at night, spends the greater part of the day in university precincts and in the club-rooms, refectory, and afternoon society meetings, enjoying much of that interplay of mind upon mind which is too often supposed to be the monopoly of the residential college.

The tutorial system also is far more developed in some universities than Mr. Herklots seems to imagine. Undoubtedly, however, there are many ways in which the civic universities can be improved, but changes for the better are taking place rapidly. Mr. Herklots' lively essay may do something to stimulate the desire for such improvement in the minds of both students and staff and, if so, will have served a useful purpose. At the least, it provides most entertaining reading for members of universities, ancient or modern.

C.W.V.

Creative Education at an English School : by J. Howard Whitehouse. (Cambridge University Press. Pp. xi+167. 16s. net.)

About half of this very handsome book consists of illustrations showing the art and craft work done by boys at Bembridge School. They include many forms : writing and illumination, sketching and other drawing in colours and pencil, sculptures, models, furniture, pottery, printing, and woodcuts. The work of certain boys shows great skill and originality ; but, what is of more educational interest, " every boy in the school is taught drawing at every stage of his school life." " It is not expected that every boy will become an artist, or that he will desire to adopt art as a profession in later life. It is hoped that as a result of his practical work in drawing, every boy will ultimately have a new means of communication and of self-expression." And so with other arts and crafts : they " are regarded as instruments of spiritual and intellectual education." All this is admirable ; and if it can be done with delight and spontaneity, and without sacrificing other values, such training is far more valuable for the great majority that the incidental art and manual work which have to fight for their existence in most places of academic learning.

F.A.C.

Art in the Life of Mankind : by A. W. Sealey. (Batsford. Book I. Pp. vii + 105. Book II : Pp. vii+114. 5s. each.)

These two books, by the Professor of Fine Art in the University of Reading, are the first of a series which he promises on the history of art. We may say at once that the work promises to be a most comprehensive and useful one to the student of art and reveals a width of knowledge and a catholicity of taste in the writer which are most welcome. The first book gives " a general view of art, its nature, meaning, principles, and appreciation." Fundamental

principles of æsthetics are touched upon clearly, if not profoundly, and closely connected with art products. It is surprising, however, that so comprehensive a writer should make so little use of the results of experiments in the appreciation of art, especially in such topics as taste, proportion, rhythm, and colour, to select four chapters. The second book deals with art in ancient times, and of this we may add that the well-selected and admirably reproduced illustrations greatly enhance the value of the book, which, indeed, may be said of Book I with equal truth. Indeed, the mode of production helps to make the volumes of remarkable value at the price.

The Teaching of Arithmetic in the Infant and Junior School : by A. Monteith, B.Sc. (London, Geo. G. Harrap and Co. Pp. 233. 6s. net.)
Teaching the Essentials of Arithmetic : by P. B. Ballard, M.A., D.Litt. (London, University of London Press. Pp. 260. 6s. net.)

Miss Monteith, a well-known writer on arithmetic for young pupils, has gathered together into the former of these two volumes a deal of useful practical information for teachers and students preparing to be teachers. The book can be safely recommended to those engaged in teaching scholars under ten years of age. Teachers of senior pupils may gain needed insight into the methods profitably adopted in the early stages by a careful examination of it, and thus render the progress of their scholars less difficult than it often is at present.

Dr. Ballard has written another of his provocative books and teachers of all grades will find something of value in these chapters, even if that something be only a stimulus to reconsider one's own preferences (or prejudices). There is urgent need for careful revision of many of our methods in arithmetical teaching, and Dr. Ballard's book, if read critically and thoughtfully, will contribute its quota in bringing about the necessary reform.

Modern Language Instruction in Canada. (The University of Toronto Press. Vol. I, pp. 547 ; Vol. II, pp. 852.)

These two large volumes, while primarily concerned with the teaching of modern languages in Canada, contain much material of interest to serious students of modern language teaching in all countries.

The greater part of Volume I consists of an annotated bibliography of books and articles dealing with modern language methods, drawn from English, American, French, German, and other sources. The outlines of the contents of these books and articles provide a wide field of material for investigator or teacher.

Nearly half of Volume II deals with the history of modern language teaching in Canada. Much of the rest of the book is also chiefly of local interest, but some chapters have a wider appeal, as for example those giving the comparative results of modern language tests in Canada, England, and the United States.

The volumes record investigations of great value, especially by way of preliminary exploration. They could, however, have been improved by more severe editing and compression.

Thomas Day : by Sir Michael Sadler. (Pp. 47. Cambridge University Press. 2s. 6d. net.)

A short sympathetic pen sketch of one of the Eighteenth Century idealists to whom subsequent generations owe so much and acknowledge so little. Thomas Day is barely known in the twentieth century, "Sandford and Merton" may be found in a library, but it will usually be on an undusted shelf ; if it be taken and read by modern youths its artificiality is at once apparent ; Day himself, as author of so much scantily veiled " pi," is unable to hold interest,

but Sir Michael Sadler has put the subject of his study into his real setting ; he tells us of the Day whom Rousseau inspired, and of his circle of friends. We can laugh to the verge of tears at Day's efforts to educate a future wife for himself, while perchance we are moved to think Sobrina and Lucretia were fortunate to marry other men. What girl would want to call "husband" one who attempted to train her nerve by hot sealing wax and a pistol ?

But for all this fanatic sincerity, Day's moral qualities have been brought out, we see something of him as he really was, and feel we ought to learn more of this " English disciple of Rousseau." A.P.B.

The Springs of Laughter : by C. W. Kimmins, M.A., D.Sc. (Methuen and Co. Pp. 178. 6s.)

The principal interest of this work lies in the records of Dr. Kimmins' own investigations as to the sense of humour of children of various ages, and as to their favourite types of stories, and so forth. This is supplemented, however, by a discussion of the theories of laughter in recent centuries including those of Hobbes, Spencer, Darwin, Freud, and Bergson. The problem of the appreciation of humour by children is one that is full of interest, and Dr. Kimmins' lively and vigorous treatment of the subject enhances that interest even if he passes somewhat lightly over points of special psychological difficulty. One chapter of special interest deals with the laughter of coloured children.

Educational Statistics : by Ata Husain. (Printed at the Feroz Works, Lahore. Pp. 84.)

In the author's words, " it is the duty of an educational statistician to turn the light on how pupils enjoy a certain minimum of facilities for education best suited to their needs—in other words, an equality of opportunity in education." The author examines statistics of educational activity published in Great Britain, U.S.A., and British India. He notes the difficulty, and in some cases the impossibility, of making accurate comparisons owing to the varied classification adopted for enumeration.

The book would be of interest to anyone desiring statistics of educational activities in British India.

The Training of Teachers in Scotland : by R. R. Rusk. (Pp. 159 and index.)

This is described as " an historical review " and contains matter which is no doubt accurate as well as of great use to the student of Scottish educational history who has for too long been deprived of comprehensive manuals comparable with those on education in England. The " get-up " of this book is not such as to attract the general reader at a first glance, but Dr. Rusk has compiled lists of the most valuable references, so that with the initial aid of this text the serious enquirer should be able to go a very long way in his studies.

Historical Foundations of Modern Education : by E. H. Reisner. (New York, Macmillan and Co. Pp. 513. 11s. net.)

An interesting, stimulating, and readable work. It carries the reader from the uncertain time of the beginnings of Greek poetry to the 17th C. A.D., reviewing the factors which influenced education in that period of nearly three thousand years. With its references it is almost encyclopædic, but it does not make a dull moment : even to glance through the nine page index is a revelation to the educated man.

The Practical Elocution Book : by Victor MacClure. (London, Harrap and Co., Ltd. Pp. 270. 10s. 6d. net.)

Mr. MacClure, well known as novelist and playwright, has written an interesting book on elocution. The first portion of the book consists of nine chapters dealing, in a rather superficial though pleasing way, with some of the fundamentals of clear speech. " The acquisition of clear, effective speech calls for simple common-sense, patience, exercise. And the greatest of these is common-sense. For to a very great extent it can reduce the amount of patience and exercise required."

The second part of the book contains many selected passages specially marked for reading by eminent English players and authors, and other passages analysed and marked to assist the student. Readers will be particularly grateful to the author for giving them an insight into the technical methods of some of our most gifted players.

Coloured Thinking, and other Studies in Science and Literature : by Professor D. F. Fraser-Harris. (London, Geo. Routledge and Sons, Ltd. Pp. 269. 5s. net.)

The Sixth Sense and other Studies in Science and Literature : by Professor D. F. Fraser-Harris. (London, Geo. Routledge and Sons, Ltd. Pp. 174. 5s. net.)

The former contains twelve and the latter nineteen essays on subjects varying from " Can we believe our Senses ? " to " Poetry and Science," and from " The Modern Dinner " to " The Duration of Life." Many of the essays have previously appeared in periodical form, but the publishers have done well to collect them, and both books form useful additions to the " Science for You " Series. Most of the essays are popularly written in an easy pleasing style, and should achieve the aim of the series, " to give the general reader some knowledge of what modern scientists are doing and hope to do."

From Magic to Science : Essays on the Scientific Twilight : by Dr. C. Singer. (London, Ernest Benn, Ltd. Pp. 253. 25s. net.)

The increasing number of students of the history of science will be profoundly grateful to Dr. Singer for this volume. He has revised and collected together seven essays : " Science under the Roman Empire " ; " The Dark Ages and the Dawn of Science " ; " The Lorica of Gildas the Briton " ; "Anglo-Saxon Magic " ; " The Visions of St. Hildegard of Bingen " ; " The History of the Herbal " ; and " The School of Salerno and its Legends." The whole makes a very interesting and delightful volume. Teachers of science in colleges and secondary schools will undoubtedly place this book in their reference libraries. Students will look forward eagerly to the volume promised by the author to deal with the later mediæval period.

Living Creatures : by C. Von Wyss. (Black. Pp. xi+406. 12s. 6d.)
The Teaching of Nature Study : by C. Von Wyss. (Black. Pp. ix+101. 3s. 6d.)

Throughout these two books it is obvious that the writer knows with a deeply interested knowledge the creatures and plants of which she tells.

The first consists of a series of animal and plant studies, and will be appreciated not only by teachers but by all who love the countryside, for, to quote Professor J. A. Thomson, who writes the foreword, " It rises beyond Science to Art in disclosing to us convincingly the significance of the familiar."

The second discusses the characteristics of nature study, methods of procedure in teaching, and schemes of work, and can be highly commended as the work of an experienced and inspiring teacher, who has the gift of writing clearly and delightfully.

The Beacon Study Readers : edited by Frank Roscoe. (Ginn and Co. Books 1—5. Teachers' Manuals, 1—5.)
This is a very useful collection of readers for children of various school ages, carefully graded, and providing information and ideas upon many subjects, which will interest boys and girls, and the knowledge of which may be regarded as an essential part of a good general education. The Teachers' Manuals contain useful practical hints upon nearly every lesson, and show how the various lessons can be used as centres for general work in English.

The Works of Geber : Englished in the year 1678 by Richard Russell. A new edition with Introduction by E. J. Holmyard, M.A., M.Sc., D.Litt. (London, J. M. Dent and Sons, Ltd. Pp. 264. 6s. net.)
Students of chemistry as well as that growing body of general readers who are interested in the gradual development of scientific studies will welcome this volume, with the schclarly introduction by Dr. Holmyard. The publishers are to be congratulated also on the excellent way in which the book is produced.

Poetic Values : A Guide to the Appreciation of the "Golden Treasury." by E. A. Greening Lamborn. (Oxford University Press. Pp. xi+226. 6s. 6d.)
A book by Greening Lamborn is taken up with interest and expectation by those who know his vivid book on "Literary Appreciation." It is a relatively dull task, however, that he has attempted here : that of giving notes and comments on the poems in the "Golden Treasury." Undoubtedly these will be useful to those who study each poem with intensity, but it is to be hoped that the reference to the notes will only come after the poems have been themselves absorbed. We are sure Mr. Lamborn does not wish to lend his influence to a return to the deadly analytic study of poetry.

Plants and Animals of Tropical Africa : by M. D. Ainslie. (Christian Literature Society. Pp. viii+171.)
This book was written at the suggestion of the Director of Education for Nigeria for use in schools of tropical Africa. As the author's husband was conservator of forests in Nigeria, she has had exceptional opportunity of studying her material first-hand, and the result is a most useful book which may well serve as an introduction to elementary biology to children in other countries, and not merely to the scholars in the district for which it was intended.

Learning and Leadership : by Alfred Zimmern. (Oxford University Press, Mr. Milford. Pp. 111. 5s. net.)
Mr. Zimmern supports a thesis that it is useless to view current events in the light of pre-war experience only. Modern problems cannot be solved by old-fashioned machinery ; provision should be made through international contacts for a wider, truer knowledge of each nation by the rest. The Geneva School of International Studies is preparing the solid ground upon which the League of Nations can stand without owing any support to "exhaustion, poverty, or fear."

Lyrical Poetry from Blake to Hardy : by H. J. C. Grierson. **The Structure of the Novel :** by Edwin Muir. **Phases of English Poetry :** by Herbert Read. (The Hogarth Press. Pp. 150, 151, and 159. 3s. 6d. each.)
These are further volumes of the valuable Hogarth lectures on literature, and form excellent critical introductions to the subjects selected for the more advanced student.

Life and Work of the People of England : by Dorothy Hartley and Margaret M. Elliot. **The Fourteenth Century.** Pp. 129. **The Seventeenth Century.** Pp. 129. (B. T. Batsford, Ltd. 5s. 6d.)
These would form valuable supplements to the study of the periods of history concerned. Each volume contains about 50 page plates, which means over 200 individual pictures with notes.

Free Composition in French : by C. E. Mills, B.A., and H. B. Mills, B.A. (Nelson and Sons, Ltd. Pp. 146. 1s. 9d.)
This little book, by one who has a considerable reputation in the Midlands as a teacher of French, in collaboration with his wife, who is herself French, follows original lines and is obviously the result of much thought and experience. We like particularly the width of treatment shown in the sections dealing with free composition in French.

A Handbook of Greek Mythology : by H. J. Rose, M.A. (Methuen and Co., Ltd. Pp. 363. 16s.)
This book is by the Professor of Greek in the University of St. Andrews. The author remarks that he was led to write the book because of the need he felt as a teacher of classics of a work dealing with Greek Mythology in the light of modern research. The book displays erudition and would be a valuable work of reference for the general reader as well as a useful companion for the study of classics. The index with a guide to pronunciation of the Greek names should prove very serviceable.

NOTICES OF OTHER JOURNALS.

Monthly List of Books catalogued in the Library of the League of Nations. First year, Volume I, 1928. Société des Nations, Genève ; agents Constable and Co., 10 and 12 Orange Street, London, W.C.2. Monthly price 6d. ; yearly subscription 4s.
The contents include books on the Société des Nations, International Law, International Relations, Social Questions, History, Geography, Economics, Finance, Commerce, Transport, Government Documents. Poetry, Science, and Fiction are generally omitted, but under Social Questions are some books on medicine and hygiene. A special fund has allowed the purchase of numerous books on child welfare, see especially Nos. 4, 5, 6-7, for April, May, June-July, pages 66-70, 89-102, 129-136. These pages should be valuable to librarians of training colleges anxious to put their students in touch with international discussions.

PUBLICATIONS RECEIVED.

ENGLISH.

Essays of Yesterday : selected by H. A. Treble and G. H. Vallins. (Harrap. Pp. 272. 2s. 6d.)
Old Celtic Tales : retold by E. M. Wilmot-Buxton. (Harrap. Pp. 135.)
Prose of To-day. (Longmans, Green and Co., Ltd. Pp. xxxii+190. 2s. 6d.)
The Beacon Study Readers : edited by Frank Roscoe. Books 1, 2, 3, 4, 5. (Ginn and Co. Pp. 128, 160, 192, 224, 254. 2s. 3d., 2s. 6d.). Also Teachers' Manuals, 1, 2, and 3. (Pp. 112, 96, and 52. 2s.). Also First Lessons.
English Literary Prose in the Making : by C. Bullock. (Harrap. Pp. 236. 3s.)

Timon of Athens : edited by Ernest Hunter Wright. (G. G. Harrap and Co. Pp. xxx+128. 2s. 6d.)
Oliver Goldsmith : The Good-Natured Man : edited by Robert Herring. (Macmillan. Pp. xix+107. 1s. 6d.)
Selections from Swift : edited by W. T. Williams and G. H. Vallins. (Methuen and Co. Pp. xxviii+190. 2s.)
Selections from Evelyn's Diary : edited by H. A. Treble. (Methuen and Co. Pp. xix+200. 2s.)

FRENCH.

An Introduction to Spoken French and Spoken English : by H. Dax. (Harrap. Pp. 104. 1s. 3d.)
Modern French Verse : selected and edited by L. R. Gleed and J. Baswitz. (Harrap. Pp. 266. 3s.)
The French Classic Age : by N. Scarlyn Wilson. (Librairie Hachette. Pp. vi+272. 6s.)
French Prose and Verse for Recitation : edited by H. J. B. Wanstall. (Harrap. Pp. 93. 1s.)
The Phonetic Gateway to French : by Philip H. Churchman. (Harrap. Pp. 115. 1s. 6d.)
A Book of French Verse from Hugo to Larbaud : edited by T. B. Rudmose-Brown. (Oxford University Press. Pp. 128. 2s.)
The Active French Course : by F. A. Hedgcock. (University of London Press. Pp. xiv+160. 2s. 9d.)
La Bataille des Falkland : by Farnère and Chack. (Oxford University Press. Pp. 112. 1s. 6d.)

LATIN.

Readings from Cicero : by Alexander Duthie. (Harrap. Pp. 107. 1s. 6d.)

GERMAN.

German Short Stories : selected by H. G. Fielder. (Oxford, at the Clarendon Press. Pp. 134. 2s. 6d.)

HISTORY.

The Headway Histories, Books 1 and 2 : by R. K. and M. I. R. Polkinghorne. (University of London Press, Ltd. Pp. 100 and 128. 1s. 6d. and 1s. 8d.)
A Concise History of Great Britain : by D. C. Somervell. (Bell and Sons. Pp. xiii+657+xv. 6s. 6d.)
A History for British Schools : by D. C. Somervell. Modern, Books 1 and 2. (Bell and Sons. 3s. each.)

MATHEMATICS.

Practical Measurement as an Introduction to Science : by H. R. Charter. (Longmans. Pp. xi+80. 2s. 6d.)
Practical School Algebra : by C. V. Durell. (Bell. Pp. xii+320+lx. 4s. 6d.)

GEOGRAPHY.

A Geography of Western Europe : by E. D. Laborde. (University of London Press. Pp. xii+312. 8s. 6d.)

Geographical Exercises : by L. Dudley Stamp and Elsa C. Stamp. (Longmans, Green, and Co., Ltd. Pp. 64. 2s.)

Longman's Geographical Exercise Book, Parts 2 and 3 : by L. Dudley Stamp and Elsa C. Stamp. (Longman's. Pp. 28 each. 9d. each.)

The Columbus Regional Geographies, Book 3 : by Brooks and Finch. (London University Press. Pp. 188. 2s. 3d.)

PHYSICS.

Intermediate Heat : by R. A. Houstoun. (Longmans. Pp. ix+312. 3s. 6d.)

BIOLOGY.

Plant Life and Its Romance : by F. E. Weiss. (Longmans. Pp. viii+136. 3s. 6d.)

Queer Fish : by C. M. Yonge. (Routledge. Pp. viii+193. 5s.)

MISCELLANEOUS.

Is an International Language Possible ? : by E. Sylvia Pankhurst. (Morland Press. Pp. 29. 6d.)

The Dudley Writing Cards, in 10 Sets : by Marion Richardson. (Bell and Sons, Ltd. 10d. per set, or 7s. 6d. for complete series.)

Atalanta, or the Future of Sport : by G. S. Sandilands. (Kegan, Paul. Pp. 117. 2s. 6d.).

Eos, or the Wider Aspects of Cosmogony : by Sir J. H. Jeans, F.R.S. (Kegan Paul. Pp. 88. 2s. 6d.)

Two Minute Bible Readings. (Student Christian Movement. Pp. 197. 3s.)

High Class Cookery : by Margery Rhys. (Longmans. Pp. ix+217. 6s.)

Evolution Disproved : by W. A. Williams. (Williams, New Jersey. Pp. 125.)

Alma Mater, or the Future of Oxford and Cambridge : by Julian Hall. (Kegan Paul. Pp. 96.)

In the Beginning : the Origin of Civilization : by G. Elliot Smith. (Gerald Howe. Pp. 90. 2s. 6d.)

Simple Crafts for Girls : by N. A. Poole (Mrs. T. Reed). (University of London Press. Pp. 92. 2s. 6d.)

The Great Law, Vol. 2 : by Hamish MacHuisdean. (Fraser, Edward, and Co. Pp. xi+86. 5s.)

New Ventures in Broadcasting. (British Broadcasting Corporation. Pp. vi+115. 1s.)

International Civics : by P. B. Potter and R. L. West. (Macmillan. Pp. xiv+315. 7s.)

The Legend of the "Francs-Tireurs of Louvain" : by Fernand Mayeene. (Centerick, Louvain. Pp. 62.)

The Forum of Education.

Vol. VII. No. 2. June, 1929.

The Intelligence of Children in Some Remote Country Schools.

By R. E. Marsden.

I.—INTRODUCTION.

This paper gathers together the results of applying mental tests to children in thirteen very remote country schools. Though no wide generalizations can be made from them it is thought that they will be interesting as they show something of the range of mental capacity met with in such schools.

The enquiry began in 1922, when Mr. P. L. Gray and the present writer applied the Stanford Revision of the Binet Tests to all the children in five schools in remote districts of Yorkshire. It was continued in 1927 when opportunities were given to test the children in eight remote schools in the south-west of England.

II.—THE SCHOOLS.

To indicate the remoteness of some of these schools the situations of a few are detailed here.

Schools A and B are in one of the dales in the West Riding of Yorkshire.* In these schools we examined the whole school population except three children who had just come from a great city. The nearest railway station is ten miles from one school, and twelve and a half miles from the other, which is two and a half miles further up the valley. The next village down the valley is two miles distant, and high hills on each side almost completely isolate the village schools from the outside world. Each school is situated in the centre of a tiny hamlet of about a dozen houses surrounded by fields on which sheep and cattle graze; practically all the people are engaged in agricultural pursuits. The village ten miles from the railway station has a small inn, which is visited by char-a-bancs in the summer, while the other village appears to have no more connection with the outer world than a postman once a day and a few motor-lorries during the week bearing necessaries not provided by the valley. School A was attended by eleven boys and five girls, while school B had nine boys and seven girls, excluding three children who had recently come from towns and who were not tested.

*See *The Journal of Experimental Pedagogy*, Vol. 6, No. 4. March, 1922.

Schools C and D are situated in the North Riding of Yorkshire, School C being on the moors five miles from the nearest town and railway station ; it was attended by six boys and five girls. School D is ten miles from the same town and far up a very scantily populated dale ; the driver of the Ford motor car refused to take us nearer than about one and a half miles from the school as the road was impossible for cars. In this remote school there were four boys and three girls, all of whom were related.

School E is in the East Riding and is five miles from the nearest town and railway station. The parents of the children were farmers. In this school there were twelve boys and eight girls.

The remainder of the schools are in the south-west counties of Cornwall, Devonshire, Somerset, and Wiltshire. All were chosen because of their remoteness and because they were attended by practically all the children living in the districts served by the schools. Though the situations actually differ from those detailed above yet they are all alike in being remote from the advantage of town life and in being taught by one or, at the most, two teachers.

Wireless telegraphy and motor traffic are breaking down the isolation of remote country districts, but the brighter children still have great difficulty in getting to secondary schools even if they win free places. Children who would easily find their way to secondary schools if they lived in towns often find it impossible to accept free places because of the difficulties of travelling.

III.—THE METHODS OF TESTING.

For schools A to E the Stanford Revision of the Binet Tests (S-B Tests) was used alone. Every child in the school was first tested with the tests for one year below his chronological age. If he failed in no more than one test he was taken through the higher ones till he failed to pass more than one test in any year. This is the minimum that gives sound results. If a child failed in more than one test for the year below his age then the tests for the lower age were used as well. The children were credited with all tests lower than the year which they passed satisfactorily.

In schools F to M group tests were used first, as time did not permit every child to be tested with the S-B individual tests. The group test used was Ballard's Columbian Group Test, which has the great advantage that the printed booklets can be used again and again, as no marks have to be made on them by the children. The Columbian Test cannot be usefully given to children under nine years of age, so the group testing was limited to those of nine years and over. The results of testing all the children over nine years of age in the schools F to M are given in Table III.

After the group test had been set as many of the children as possible were given the S-B tests and then, if time allowed, those under nine years of age were also tested.

As altogether 51 children were thus tested, both with the Columbian Group Test and with the S-B test, it was possible to find the coefficient of correlation between the tests, which proved to be ·85, and to make a table by which to calculate mental ages from the group test scores. This proved to be necessary as the norms given by Dr. Ballard appeared to be very low. Table I gives the relation between scores and mental ages used to determine the intelligence quotients of children not tested by the S-B tests.

TABLE I.
GROUP-TEST SCORES AND MENTAL AGES.

Score	35	46	54	63	70	77
Mental age (years) ..	9½	10½	11½	12½	13½	14½

Dr. Ballard's norms are given in Table II so that comparisons may be made with his results.

TABLE II.
NORMS FOR COLUMBIAN TESTS (BALLARD).

Age in years	10	11	12	13	14
Norm (score)	32	42	50	55	58

Of course the children usually said to be ten years of age range from just ten years to nearly eleven years, and have an average age of ten and a half years, so the two tables can be immediately compared.*

IV.—RESULTS OF TESTS.

The results of testing the children in thirteen remote country schools are summarized in Table III. As will be seen from the totals there were out of 197 children 28 who were very inferior; 43 inferior; 113 average or normal; 9 superior, and 4 very superior, according to the classification suggested by Terman.

In addition to these children there are the children under nine years of age in schools F to M to be considered. These are dealt with below.

*A Statistical and Psychological Investigation of Intelligence Tests, by David W. Oates (FORUM, February, 1928), states that the scores in the Columbian Tests administered in an elementary school were on the average 14 points higher than those suggested by Ballard.

TABLE III.

DISTRIBUTION OF INTELLIGENCE QUOTIENTS.

School.	*Children included in Table.*	*Number.*	*Intelligence Quotients.*						
			Under 80.	80—89.	90—99.	100—109.	110—119.	*Above* 120.	*Highest I.Q.*
A	All ages	16	2	7	4	2	—	1	135
B	,, ,, ...	16	2	4	6	3	1	—	113
C	,, ,, ...	12	1	1	7	3	—	—	97
D	,, ,, ...	7	1	2	4	—	—	—	108
E	,, ,, ...	20	2	2	6	4	6	—	118
F	9 years and over ..	15	1	2	6	5	—	1	122
G	,, ,, ,, ..	20	2	4	8	5	—	1	131
H	,, ,, ,, ..	8	1	1	4	2	—	—	102
I	,, ,, ,, ..	22	5	4	8	5	—	—	105
J	,, ,, ,, ..	11	1	4	2	4	—	—	107
K	,, ,, ,, ..	10	1	3	2	2	2	—	119
L	,, ,, ,, ..	26	3	7	8	7	—	1	106
M	,, ,, ,, ..	14	6	2	5	1	—	—	102
	Total	197	28	43	70	43	9	4	
	Class		V.I.	I.	Average.		S.	V.S.	

V.—CHILDREN UNDER NINE YEARS OF AGE.

When time would not permit of all the children under nine years of age being tested in a school the head mistress was asked to pick out the brightest children. Table IV gives the result of testing the selected children, and as many as possible of the others.

Table IV.

Children under Nine years of age tested by S-B Tests.

School.	*No. on Roll.*	*I.Q.s of Children. Tested.*	*Remarks.*
F	7	104, 106	Selected by H.M.
G	11	121, 138*	Selected by H.M.
H	13	104, 116, 85, 94	Selected by H.M.
I	12	None	
J	9	71, 80, 83, 92, 99, 102, 104, 108, 117	All the children under 9 years of age.
K	15	104, 105, 131†	Selected by H.M.
L	19	111‡	Only child under 9 years in main room.
M	22	112, 113, 114	Selected by H.M.

*Older sister I.Q. 131.
†A younger brother said to be equally bright.
‡Score in Columbian Test 40. Age 8 years 5 months.

From Table IV it can be seen that there were among the children under nine years of age at least six superior children and three very supe ior. As all the children under nine were not tested these figures cannot be used with those for older children in the same schools.

VI.—I.Q. AND EDUCATIONAL ABILITY.

Dr. Burt says: "A mental ratio above 115 or 120 indicates central school ability at least; a mental ratio above 130 or 135 scholarship ability."*

He further suggests that as the tests he is considering do not give the older children so much chance to earn the higher I.Q.'s, that the lower limit be applied to older children, and the higher to younger children.

The children tested in a large northern city won Junior City Scholarships with an I.Q. of 110, while it needed an I.Q. of 130 to win a Grammar School Scholarship. In towns where there are

*Mental and Scholastic Tests, page 174. "This figure assumes that only 2 per cent. of an age-group win junior county scholarships and the next 10 per cent. places in Central Schools. Outside London the proportions vary considerably both from these figures and among themselves." Note by Dr. Cyril Burt.

sufficient scholarships to secondary schools it is probable that selective central schools are attended mainly by children belonging to the upper half of the average group, as well as by children in the superior group. The senior schools thus have in the main children of the average group with a proportion of brighter children who for one reason or another have not left for a higher form of education. Of course where the children are transferred to the senior schools on reaching a definite age, all the children in the inferior groups are found in the senior schools.

VII.—RESULTS IN NORTHUMBERLAND AND WEST SUFFOLK AND REMOTE COUNTRY SCHOOLS.

The results of three extensive surveys, together with the results obtained in the present enquiry, are collected together in Table V. The results of the Northumberland and West Suffolk surveys are taken from Mr. Russell's report.*

(*a*) In 1921, Dr. Godfrey Thomson prepared and standardized what are known as the Northumberland Mental Tests.† "The primary object of these tests was to discover gifted children worthy of free secondary education amongst those in the elementary schools of the County of Northumberland, which had not this year sent in candidates for the orthodox examination in English and Mathematics in which scholarships are usually awarded." This was taken by nearly 3,000 subjects between the ages of nine and a half and fourteen and a half years.

(*b*) On 24th February, 1922, an Intelligence Test (No. 2 Northumberland Test) was taken by all the children attending the elementary and secondary schools in the County (excluding Newcastle and Tynemouth) who were over eleven years and under thirteen years of age on the last day of the 1st March following. Results were obtained from 13,220 children in the elementary schools, and 405 in the secondary schools.

(*c*) In West Suffolk all children (2,958) of ten and eleven years of age in the elementary schools only were given the test.

The figures given in Table V are not directly comparable. The selection of the children in *a*, *b*, *c* was different, and the results from the remote country schools are in no way typical of any one

*Results of a Mental Test in the Elementary Schools of West Suffolk. Selected Reports E. No. 26. *Board of Education*, 1926.

†Thomson: *The British Journal of Psychology*, XII, 1921.

area, but are merely the pooling of the results from thirteen small remote country schools, widely separated geographically. Again the Northumberland and West Suffolk I.Q.'s are grouped in slightly different ways, as can be seen in the table.

Table V.

Distribution of I.Q.'s of Children in Northumberland, West Suffolk, and Remote Country Schools.

West Suffolk, 1925.		*Northumberland.*			*Remote* Country Schools.*
			Percentages.		
I.Q.s.	*Percentage.*	*I.Q.s.*	1921.	1922.	
Above 140	.2	140	.3	.15	
131 to 140	1.3	130 to 139	2.9	.95	2.0
121 to 130	3.3	120 to 129	8.6	5.4	
111 to 120	10.2	110 to 119	15.2	16.8	4.6
101 to 110	18.9	100 to 109	22.4	26.4	21.8
91 to 100	26.8	90 to 99	23.9	26.0	35.6
81 to 90	19.2	80 to 89	15.2	14.5	21.8
Below 81	20.1	Below 80	11.5	9.8	14.2
Total ..	100		100	100	100

*This column gives the results of testing the children in the country schools of Table III.

VIII.—DISCUSSION OF RESULTS.

Compared with the children in the large surveys the remote country schools appear to have children of smaller capacity for learning. Table III makes it clear that the small schools differ very much among themselves so that the few included in the present survey may be anything but a true sample of such small schools as a whole. This individual variation is interesting. Two of the schools (C and D, Table 3) had no child and four other schools had no child of nine years of age or more with an I.Q. of 100 or above.

Districts in which artisans and the more skilful farm workers lived gave a better result than districts in which farm labourers worked on poor types of farm.

Upon enquiry it was found that children of superior ability had parents who in some way stood out in the district. The father of a little girl with I.Q. of 135 repaired sewing machines, gramophones, etc., for the people in the district, and in another place the father of the brightest child employed several men and had fitted up wireless. Children of the same family tend to have I.Q.'s in the same group,

so that the presence of a highly intelligent family of three or four children may considerably alter the average I.Q. of the school.

During the investigation special note was taken of what teachers called "late developers." When questioned, the teachers usually said that such children would never be expected to catch up the other children, but would always do work done by children who were a year or two younger. Thus a boy of fourteen years, who did the work done by normal children at twelve years of age, was said to be a late developer, though it was thought he would always be two years behind. It is evident that such children are really children with less than average ability who make progress by steady application, and of course this may take a child a long way if time allows.

The teachers usually agreed with the results of the tests so far as ranking their children was concerned, but they differed as to what was an "average" child, because they knew little of school children other than those they taught.

As usual the testing proved enjoyable to the children and interesting to the teachers. It was pointed out that even a low I.Q. did not mean the child could not make progress, but that he wanted special teaching.

IX.—CONCLUSIONS.

(1) The remote country schools contain in aggregate a large number of children who could profit from a higher form of education than that at present within their reach.

(2) These small schools differ very much among themselves, some having no children of more than average capacity, while others have a larger proportion of superior children than the schools of the country when taken as a whole.

(3) One family of bright children will make considerable difference to these small schools.

My thanks are due to the authorities and others who gave me the opportunities to carry out this enquiry; to those who were so scrupulously careful when assisting in the testing; to the teachers who helped in every possible way, and patiently answered numerous questions, and to my former colleague, Mr. P. L. Gray, who shared with me the testing of the children in the Yorkshire schools, and who generously gave me permission to use the results in this paper.

Left-handedness in Relation to Speech Defects, Intelligence, and Achievement.

By David W. Oates.

An examination of individual differences carried out by the writer as part of an investigation of temperament types involved, among other things, a study of the distribution of sinistrality among the individuals forming the subjects of the investigation. Some of the points arising appeared of sufficient interest to warrant the extension of the work to include a definite investigation of the incidence and significance of sinistrality among boys of school age. Several theories regarding the implications of handedness have been suggested; most of the hypotheses, however, have been based on limited data. An examination of a considerable number of subjects, it was felt, would provide further carefully collected and recorded data which might contribute something to the proof or disproof of prevailing theories. The subjects of the investigation were 4,176 boys, nine to eighteen years of age, attending secondary, central, and elementary schools.

COLLECTION OF DATA.

The data were collected through the valuable co-operation of the head masters of the schools concerned.* The types of sinistrality were determined by noting the preferred hand in one-handed activities, and the relative position of the two hands in two-handed activities. The subject's own word in reply to questionnaires has formed the source of information in some previous studies of the subject. This method, if it had been possible with the subjects of this investigation, would not yield as reliable data as can be obtained by actual tests. Definite tests on the following lines were, therefore, used. Care was exercised to detect any cases of pathological left-handedness, where natural right-handedness was interfered with through injury to or defect in the right hand. One definite case was discovered and it was excluded from the data.

Uni-manual Tests.

Observe which hand is used to (*a*) write with; (*b*) throw a ball with; (*c*) hammer with.

*I wish to acknowledge my indebtedness to the head masters for their generous assistance which alone made the collection of the data possible, and to Professor C. Burt and Dr. Ballard for their kindness in reading the manuscript.

Bi-manual Tests.

Observe the way in which the hands are placed when using a broom :

(*a*) R. hand on top, L. hand at centre of broom.
(*b*) L. ,, ,, ,, R. ,, ,, ,,

Observe the way in which the hands are placed when using a cricket bat :

(*a*) L. hand at end of bat nearest body, R. hand towards centre of bat, bat extended to the right ;
(*b*) R. hand at end of bat, L. hand towards centre, wrists crossed, bat extended to the right ;
(*c*) R. hand at end of bat, L. hand towards centre, bat extended to the left ;
(*d*) L. hand at end of bat, R. hand towards centre, wrists crossed, bat extended to the left.

In order to determine *eyedness* the following tests were used :

(1) Note whether the right or the left eye is the sighting eye.
   (*a*) When using a telescope ;
   (*b*) When shooting.

(2) Let subjects use a small ring such as a finger ring ; hold it at arm's length, and encircle a small object a few yards away. Focus on the object, then close the right eye. Check what happens.
   (*a*) No change ;
   (*b*) Ring moves to the right of the object ;
   (*c*) Ring moves to the left of the object.

The result should then be checked by re-focussing with both eyes open, then closing the left eye, and noting the result.

Careful records were made of all cases of apparent nervous disability and of speech defects. Particular attention was devoted to the effort to trace all cases where a natural tendency to handedness in writing, etc., had been interfered with by parents or teachers. In order to trace what relationship, if any, exists between sinistrality and both intelligence and school achievement, head masters and teachers possessing intimate knowledge of the subjects of the investigation were asked to place them in one of the three categories—above average, average, below average—for (*a*) intelligence, and (*b*) school achievement, as indicated by school progress.

CLASSIFICATION OF DATA.

The conventional broad classification of the subjects into left-handed and right-handed is too indefinite to provide a satisfactory basis for an examination of the possible implications of type or degree of sinistrality. For statistical convenience it was desirable that different variations in uni-sinistrality or uni-dextrality should be grouped. I have, therefore, adopted Rife's scheme* which is clear, and has the additional advantage that it will enable us to compare our findings with the results of two other investigations. The types are determined by a consideration of the preferred hand in uni-manual activities, and also the predominant hand in bi-manual activities, that is the hand nearer the functioning end of the implement used. The formulæ used for the types are :

LLL. Individual is left-handed in both uni-manual and bi-manual activities ; that is, he writes and throws, etc., bats and sweeps left-handed.

LRR. Individual is left-handed in uni-manual activities but right-handed in bi-manual activities ; that is, he writes, throws, etc., left-handed, but bats and sweeps right-handed.

LLR. Individual is left-handed in uni-manual activities, but has a divided preference in bi-manual activities ; he writes, throws, etc., with the left hand and is left-handed in batting, but right-handed in sweeping or vice-versa.

These are the three sinistral types ; there are the corresponding dextral types—RRR, RRL, RLL.

THE DISTRIBUTION OF SINISTRALITY.

TABLE I.

SINISTRALS.

	No.	*Percentage.*
LLL	97	2.32
LLR	102	2.44
LRR	27	.64
	226	5.4

DEXTRALS.

	No.	*Percentage.*
RRR	3,902	93.44
RRL	42	1.01
RLL	6	.15
	3,950	94.6

*J. M. Rife, " Types of Dextrality." *Psychol. Review*, 29, 1922. 474-480.

Mr. Hugh Gordon* has suggested that there are two types of left-handedness—one normal, caused by the dominance of the right hemisphere of the brain, and the other, pathological, due to some interference with the normal functioning of the left hemisphere of the brain. Care was taken in this investigation to exclude any case where handedness was interfered with by accident to or any observable deformity in the right hand or limb. There may be, however, " other cases in which the neural injury is so slight as to escape detection, and yet is sufficient to turn the balance of power in favour of the left hand."† It is, as stated, impossible to detect such cases, and we are not in a position, therefore, to test this interesting hypothesis.

The general fact that 5.4 per cent. of the subjects are left-handed is in close agreement with informed opinion. In a survey of 5,000 London children Professor Burt‡ found 5.1 per cent. were left-handed, which is in very close agreement with the result here. Much higher percentages of left-handedness have been found in other investigations, ranging from Van Biernliet,§ 22 per cent. in 100 cases, to Pearson and Woo,‖ 28.8 per cent. in 7,000 cases, and Parsons,** 29.7 per cent. in 865 cases. The distribution in the sinistral group—LLL 42.92 per cent., LLR 45.13 per cent., LRR 11.94 per cent., indicates a larger proportion of pure sinistrals and a smaller proportion of mixed sinistrals than Downey†† found in an investigation of a select group of 152 males, the figures being LLL 25.0 per cent., LLR 26.97 per cent., LRR 46.71 per cent.

Great care was taken in the examination of the sinistral group, both in administering tests and in accuracy of report ; the findings in this section of the table have, therefore, a high degree of reliability. There are sources of error, however, in the dextral group, and the percentages of RLL and RRL subjects are not reliable, as the bimanual tests were not administered to a section of the 3,950 subjects, special attention being devoted to cases of subjects suffering from speech defects or who were unusual in other respects, as these were of particular interest in reference to the main problem under investigation. No conclusions will be drawn from this section of the table.

*" Brain," 43, 1920. Pp. 312-368.

†*Times* Educational Supplement. July 15th, 1920.

‡" Mental and Scholastic Tests." Table XXXVII, p. 311.

§M. Van Biernliet, " L'Asymetrie Sensorielle," Bulletins de l'Academie royale de Belgique, 3me serie. Tom. XXXIV, Bruxelles, 1897.

‖Karl Pearson and L. T. Woo, " Dextrality and Sinistrality of Hand and Eye." Biometrica XIX, Pts. 1 and 2, July, 1927. Page 168.

**B. S. Parsons, " Left-handedness : a New Interpretation." New York, 1924.

††J. E. Downey, " Types of Dextrality and their Implications." *Am. Jl. of Psychol*, 38, 1927. Page 324.

Though the percentage differences in the Dextral groups in Table I have no reliable significance, interest is given to such a table as a whole by one of the conclusions reached by Pearson and Woo in their valuable investigation that "lateralism whether ocular or manual is a continuous variate, and that dextrality and sinistrality are not opposed alternatives, but quantities capable of taking values of continuous intensity and passing one into the other."* In the light of this statement, we might have expected a higher percentage of cases falling into the intermediate groups—LRR and RLL. The high percentage of cases in the pure groups at the extremes of our distribution appears to support the theory of absolute unilateralism advocated by Van Biernliet ; when, however, dominant ocularity, dealt with in our next section, is taken into account our data are in accord with those of Pearson and Woo, which they found "wholly opposed to the theory of absolute laterality."†

HANDEDNESS AND EYEDNESS.

The dominant eye tests were carried out with all except a section of the dextrals, as has already been pointed out. In the unselected section of the subjects to whom the eye tests were administered, 25 per cent. of the sinistrals were found to be left-eyed, and 1.86 per cent. of the dextrals were left-eyed. The whole of the sinistrals and the dextrals examined yielded the following percentages : the RLL group was too small to have any significance and has been omitted.

TABLE II.

Type.	*Left-eyed. Per cent.*	*Right-eyed. Per cent.*
LLL	55.5	44.5
LLR	44.05	55.95
LRR	25.0	75.0
RRL	21.05	78.95

In the telescope test some cases of weak eyelid control were discovered where a finger was used to close the eye, and it was suggested that in the shooting test such boys used the eye which they cannot close readily although it may not be the dominant eye. The ring test was used throughout as the final test for eyedness,

*Op. cit., page 199.
†Op. cit., page 181.

as it is least likely to be affected by established habit : as is well known, workers with microscopes learn to use both eyes, and certain marksmen shoot with both eyes open. An absolutely negligible number, considerably less than 1 per cent., of cases occurred where the dominant eye, as determined by the ring test, was not used in the telescope test. But in practically every case the dominant eye was used in the shooting test. Two cases—an RRR boy left-eyed using the right eye, and an LLL boy right-eyed using the left eye—were obviously due to the position of the gun as determined by handedness.

In a selected group of 194 left-handed boys studied 52.6 per cent. were right-eyed ; this agrees closely with Ballard* who found that of 51 left-handed individuals 57 per cent. were right-eyed. Mills† on the other hand found only 15.4 per cent. of a group of 110 left-handed individuals right-eyed. The most recent investigation by Downey‡ reports 43.5 per cent. of a group of 131 left-handed men, and 34 per cent. of a group of 100 left-handed women right-eyed. From our table it appears that there is an increasing amount of crossed sinistrality in the mixed sinistral types, and that it is least in the pure sinistral group.

An analysis of the twenty-eight cases of definite nervous disability discovered provided the details given in the following table, which differentiates between " crossed " individuals, that is cases where the dominant hand and dominant eye are on opposite sides of the body, and " not crossed " individuals.

TABLE III.

CASES OF NERVOUS DISABILITY.

Type.	*Crossed.*	*Not Crossed.*
LLL	1	4
LLR	2 (1?)	7
RLL	2 (1?)	—
RRL	1	2
RRR	1	8

Two cases, one in each of the LLR and RLL groups, are boys who have undergone operations, and nervous disability, it

*P. B. Ballard, "Sinistrality and Speech." *J. Exper. Ped.*, 1, 1911-12. Page 304.
†L. Mills, " Eyedness and Handedness." *Amer. J. Opth*, 8, 1925. Page 5.
‡J. E. Downey, " Dextrality Types and their Implications." *Amer. J. Psychol.*, 38, 1927. Page 331.

was suggested, was an after effect and not a result of normal causes. If we omit these two cases then we find that in the twenty-six cases of marked nervous disability, five of the subjects are crossed sinistrals or crossed dextrals, and twenty-one are not crossed. The significance of these figures is more apparent when calculated as percentages. We then find that 2.4 per cent. of the subjects in which there was crossing suffer from nervous defects, whereas for the non-crossed groups the number of cases was just under 1 per cent. These figures give slight support to Quinan's hypothesis* that such crossed functioning is evidence of a psychopathic constitution, but while the percentage of cases is so low such a suggestion can be regarded as only purely tentative.

SINISTRALITY AND SPEECH DEFECTS.

The relationship between sinistral tendencies and speech defects has been emphasized by several writers. Ballard, for example, reports that he found that stammering was twice as frequent among left-handed children who had been forced to use the right hand. It is also clearly indicated in the interesting report† of Mr. Lewis, of Lingfield Colony Special Schools, on his experiment in training twelve right-handed sub-normal children to use their left hands. In five months they all developed a stammer, which disappeared after abandoning the left-hand training. No attempt was made in this investigation to interfere with the established manual habits of the subjects, but the analysis of the different types of sinistrality, including eye habits as well as hand habits, in their relationship to speech defects, should contribute something to the profitable discussion of the problem.

The general classification into right-handed or left-handed, without consideration of type of dextrality or sinistrality or dominant eye, gave the following distribution of stammering and allied speech defects: left-handed, 7.52 per cent.; right-handed, 1.86 per cent. as against 2.46 per cent. for all the subjects. This appears to have a little significance, and tends to support Downey's conclusion‡ that "while pure dextrals are relatively immune so far as speech disturbances are concerned, pure sinistrals are disproportionally subject to such troubles." It is of interest in this connection

*C. Quinan, "A Study of Sinistrality and Muscle Co-ordination." *Arch. Neur. and Psychiat.*, 7, 1922. 352-360.

†"Left-handedness and Mental Deficiency." *Times* Educ. Supp., May 6th, 1920.

‡Op. cit., page 362.

to note the statement made by Dr. Mott*—" Symbolic language is a social heritage in which auditory and visual symbols have been used, especially by civilized races, to express judgments and feelings. The fact that in all right-handed people it is represented in the left hemisphere shows that it has developed with the specialization of use of the right hand." The question whether we have gradually evolved from an ambidextrous stage in primitive man through differentiation of function in the two hands to the present preponderance of uni-dextrality, or whether we are evolving towards a general ambi-dextrality, as Dr. Kerr† has suggested, is a problem outside our purview in the present investigation. We are concerned only in tracing such relationship between handedness and speech as exists in the data before us. In dealing with human variability we cannot specify causes with the certainty that characterizes physics or chemistry, where the factors are comparatively well known and their combination fairly constant. Here, not only are the causes probably numerous and the combinations varied, but they are themselves only imperfectly known ; our conclusions must, therefore, be more guarded and uncertain.

Our data are analysed in the following table.

TABLE IV.

SINISTRALITY AND SPEECH DEFECTS.

	No. of Cases.		
Type.	*L-eyed.*	*R-eyed.*	*Total.*
LLL	3	5	8
LLR	4	5	9
LRR	—	—	—
RLL	—	1	1
RRL	2	9	11
RRR	12	27	39
	21	47	68

The number of cases in the separate types is perhaps too small to enable us to deduce anything more than purely tentative

Brit. Med. Jl. December 11th, 1915.

†" Left-handedness and Mirrored Writing," J. Kerr, M.D. 15 pp.

conclusions from them. If we calculate the percentage of cases of speech defect in each of the sinistral groups we have the following :

TABLE V.

	L-eyed. Per cent.	*R-eyed. Per cent.*
LLL	5.55	11.63
LLR	8.88	8.77

This appears to indicate that there is a higher percentage of speech defect in the case of crossed sinistrals than in pure sinistrals who are both left-handed and left-eyed. All cases of pure dextrals with speech defects were submitted to the eye tests, and 41.4 per cent. were found to be left-eyed. In addition, therefore, to the tendency for sinistrality to be associated with a higher proportion of speech disturbances, there appears to be evidence that crossing, whether sinistrals with dextro-ocularity, or dextrals with sinistro-ocularity, increases the tendency to speech disturbance. It might be noted that a careful study of the crossed dextrals here failed to bring to light any facts which might support Mill's contention* that crossed dextrals are " nearly always fundamentally left-handed but reversed by early training." All of the cases were undoubtedly right-handed in all the uni-manual and bi-manual tests, and the only sign of departure from dextrality that was found was two cases where the left foot appeared to be the preferred foot for kicking.

The most significant fact arising from the data is the relative difference between pure and mixed types in the proportion of cases of speech disturbance in the two groups, and this is in line with the suggestion already made regarding crossing between handedness and eyedness. If we take the whole of the 4,176 subjects we find that in the pure types for handedness only—RRR and LLL—2.01 per cent. suffer from speech defects, whereas in the mixed types—LLR, LRR, RRL, and RLL—11.8 per cent. suffer from speech defects. Ten cases of left-handed children who had been taught to use the right hand in writing were discovered ; four of these were left-eyed and six right-eyed, but in no single case was there any trace of speech defect or nervous disability. It would appear, therefore, that change of hand may or may not cause speech defect, but that the tendency to speech disturbance is more fundamentally related

*Op. cit., page 5.

to asymmetry of native organization which expresses itself in mixed handedness. This conclusion, which our data apparently justifies, is one of sufficient importance to call for further investigation. An intensive study of crossed dextrals, crossed sinistrals, and mixed handedness types, from the standpoint of nervous instability and speech defects, might yield valuable results.

Hollingworth's statement*, based on a survey of investigations of children who have been " changed over " to the right hand, that " Stammering is evidently a complication in some cases of modified handedness," and Ballard's conclusion,† based on his own investigations, that a relationship exists between stammering in school pupils and insistence upon left-handed children using the right hand, may be explained on the lines of our suggested hypothesis that speech defect is causally related to mixed types of sinistrality. The relationship between stammering and the forced use of the right hand may, as Dr. Head suggested at a meeting of the British Psychological Society in May, 1920, be due to a repression resulting from a moral fear of appearing different in a world of right-handed children. This would manifest itself in stuttering, it is suggested, only in cases where for other reasons the child was unable to adapt itself to its environment. The change of hand may, therefore, be only one of many causes in creating the neurosis which is the primary cause of stammering. It may be of interest at this point to note the theory suggested by Dr. Inman‡ that left-handedness, stammer, and squint are inter-related and have a common origin in some form of mental stress. The three are, he believes, due to repression, and represent modes of response to an excessive element of harsh severity in the exercise of parental authority. Burt apparently supports the view suggested in this paper. The incidence of left-handedness, he writes, " seems greater among those children who are temperamentally neurotic . . . It is among this limited group that the premature enforcement of right-handed activities appears to conduce to stammering ; and, as a rule, stammering is but one, although the most conspicuous, of several consequent disturbances in the more delicate adjustments of the nervous system."§ Ballard's conclusion that change of hand may take place without any resulting speech disturbance in some cases but that it produces

*L. S. Hollingworth, " Special Talents and Defects." New York, 1923. Page 185.

†Op. cit., page 299.

‡"An Inquiry into the Origin of Squint, Left-handedness, and Stammer." W. S. Inman. *The Lancet*, August 2nd, 1924.

§ C. Burt, " Mental and Scholastic Tests," 1922. Page 311.

stammering in other cases may be explained by the fact that interference with handedness produces unfortunate results in the case of mixed types but that pure handedness types are less liable to such disturbances. Such a suggestion appears to call for a close study of known cases of insistence upon " change over " of hand.

Whether or not crossed dextrality and crossed sinistrality derives from some obscure and untraceable interference with native handedness tendencies through educational training or physical injury, or ocular or other habits socially conditioned, we cannot say from our data. Only one case of definite change of hand through a physical cause was discovered, and this case was excluded. It is possible to conclude that functional asymmetry in the nervous system is a fundamental cause of both crossed dextrality or sinistrality and of mixed types of handedness.

Normal speech is dependent upon adequate co-ordination of the nervous centres. As one physiologist* puts it "Stammering is a want of co-ordination between the various muscles employed in the art of speaking." The problem of hemispheral control is one for physiologists, but it seems possible that any weakening of eye and hand dominance which expresses itself in mixed types of handedness and crossed types may be related to a form of nervous instability that reduces the power of co-ordination. This would establish the causal link between mixed handedness and speech defect to which our results seem to point. Some confirmation of this hypothesis is found in the work of Anderson,† who carried out an investigation in the laboratory of the University of Wisconsin to determine if certain traits and reactions outside the field of speech are definitely associated with stuttering. He found certain weakness in co-ordination and sense of rhythm, and concludes that stutterers " have difficulty in grasping several movements simultaneously. The significance of the kinesthetic factor seems to be that in the consciously directed speech movements a great many kinesthetic elements must be held in mind and thus co-ordinated." Similar also was the result of a test of speech defectives with the will-temperament tests by Miss Wagoner,‡ who concludes : " Such impulsion in conjunction with incapacity to speed or to co-ordinate might result in nervous irritability, which, in turn, might manifest itself in a number of different ways. A speech difficulty is but one symptom of nervous instability."

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*W. D. Halliburton, " Handbook of Physiology." Page 762.

†L. O. Anderson, " Prelim. Report of an Experimental Examination of causes of Stuttering." *J. Appld. Psychol.*, 5, 1921.

‡Quoted by Downey, " The Will-Temperament and its Testing," 1923. Page 243.

SINISTRALITY, INTELLIGENCE, AND ACHIEVEMENT.

The relationship between handedness and intelligence has engaged several workers, and as a result of Gordon's investigation,* in which he found 7.3 per cent. of children in ordinary schools left-handed as compared with 18.2 per cent. left-handed children in schools for mentally defective children, and Burt's investigation,† in which he found 5.1 per cent. of left-handed children in ordinary elementary schools, and 11.9 per cent. of left-handed children in special schools for mentally defective children, there is a widely held opinion that mental inferiority is associated with left-handedness, Ballard, however, found that, contrary to what was expected, this type was not inferior in intelligence. "Sinistrals," he writes, "as a class are in no way deficient in their general power of verbal expression; for, although the pure sinistrals are better than the dextro-sinistrals, both are better than the dextrals."‡ And this view is supported by the investigation conducted by another worker.§

In addition to a grading for intelligence into three classes, superior, average, inferior, similar grading for school achievement, based on school records, was obtained. It is thus possible not only to compare handedness types with reference to intelligence, but also to enquire into any possible relationship between sinistral type and the power to work up to the standard of native endowment for intelligence. The results are given in the following tables:

Table VI.

Sinistrality and Intelligence.

Type.	*Left-eyed.*			*Right-eyed.*			*Total.*		
	Above.	*Aver.*	*Below.*	*Above.*	*Aver.*	*Below.*	*Above.*	*Aver.*	*Below.*
LLL.....	10	24	17	10	19	17	20	43	34
LLR	11	16	8	21	29	17	32	45	25
LRR	1	2	3	3	12	6	4	14	9
RLL	1	4	—	—	—	1	1	4	1
RRL	1	4	2	7	16	12	8	20	14

*H. Gordon, "Left-handedness and Mirror Writing, especially among defective children." *Brain*, 43, 1920. 312-368.

†C. Burt, "Mental and Scholastic Tests," 1922. Page 311.

‡Op. cit., page 30.

§K. Gordon. *See J. Delinq.*, 8, 1923. 154-157.

Table VII.

Sinistrality and Achievement.

Type.	*Left-eyed.*			*Right-eyed.*			*Total.*		
	Above.	*Aver.*	*Below.*	*Above.*	*Aver.*	*Below.*	*Above.*	*Aver.*	*Below.*
LLL.....	7	20	24	4	27	15	11	47	39
LLR	10	15	10	17	30	20	27	45	30
LRR	—	5	1	3	11	7	3	16	8
RLL	—	4	1	—	—	1	—	4	2
RRL	—	7	—	5	22	8	5	29	8

No very definite conclusions can be drawn from this data, for, although every care was exercised in compiling the reports there are possible sources of error. The line between average and superior on the one hand, and average and inferior on the other, can only be roughly drawn, and, in spite of efforts to keep the judgments as uniform as possible, there are inevitable differences in distribution over the three categories from school to school. Again the data under these heads were not complete for all the boys falling within the pure dextral type. The possible suggestions arising from the data are more clearly seen in the following table.

Table VIII.

Sinistral Types and the Distribution of Intelligence and Achievement.

Type.	*Left-eyed.*			*Right eyed.*		
	Above. Per cent.	*Aver. Per cent.*	*Below. Per cent.*	*Above. Per cent.*	*Aver. Per cent.*	*Below. Per cent.*
Intelligence.						
Pure Sinistrals.....	19.6	47.1	33.3	21.7	41.3	37.0
Mixed ,, ...	26.4	49.1	24.3	25.0	45.9	29.1
Achievement.						
Pure Sinistrals.....	13.7	39.2	47.1	8.7	58.7	32.6
Mixed ,, ...	18.8	58.5	22.7	20.1	50.8	29.1

If we omit the dominant eye there is a slight balance in favour of the mixed types, the figures being: pure type 20.6 per cent. above, 35.1 per cent. below, mixed type 25.4 per cent. above, 27.6 per cent. below for intelligence, and pure types 11.3 per cent. above, 39.6 per cent. below, mixed type 19.7 per cent. above, 27.1 per cent below for achievement. This is a question which has not as yet

been fully investigated, but there is some confirmation of our result in Downey's statement that "the mixed type, especially if there is asymmetry of eye and hand, gives a higher Thorndike score and a higher score on verbal tests."* In the above table the mixed type, both left and right eyed, are superior to the pure sinistrals in native intelligence, but this conclusion could not be accepted without more intensive investigation based on widely collected data. Possibly there is no necessary relationship between sinistrality and intelligence, but that, as Burt has concluded, the incidence of sinistrality "seems greater amongst those children who are temperamentally neurotic *whether normal, super-normal, or defective in general intelligence.*"†

The most interesting fact suggested by the table is that there is a uniform drop from intelligence to achievement in the four sections, and that this is most marked in the case of the pure left-handers who are right-eyed, and next most marked in the case of those with a higher degree of dextrality and left-eyedness. If we accept the possibility that failure to carry out work in school at the level indicated by native intelligence is due to inadequate organization of the nervous adjustments, which may be broadly termed temperamental deficiency, then this suggestion is in harmony with our conclusions above regarding speech defects, etc., that crossing, whether sinistrals with dextro-ocularity or dextrals with sinistro-ocularity, is related to increase in the number of nervous disturbances. Downey's statement‡ that "highly uni-lateralized individuals are apparently less temperamental than asymmetrical individuals" is an interesting confirmation of our conclusion.

The foregoing appears to agree with the generally accepted view that there are other factors than intelligence that determine scholastic achievement. I have shown elsewhere§ that "marked failure or success in scholastic work accompanies unbalanced temperamental qualities, the nature of which is not yet determined, while the student of even temperament produces work more in accord with his native ability." We are only at the beginning of what promises to be, to some extent, a successful attempt to bring the inner workings of the mind as it functions in the performance of various school activities under closer scrutiny.

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*"Types of Dextrality among Indians." J. E. Downey. *J. of Exper. Psychol.*, X, No. 6., December, 1927. Page 480.

†Op. cit., page 311. The italics are mine.

‡*Amer. J. Psychol.*, 38. Page 360.

§"An Experimental Study of Temperament." *Brit. J. of Psychol.*, July, 1928, XIX, 1. Page 22.

CONCLUSIONS.

The results of the investigation may be very briefly summarized :

(1) The distribution of sinistrality found agrees in general with the results of other investigations.

(2) If we neglect the dominant eye test and analysis of types of handedness, there is a higher percentage of speech defects among left-handed than among right-handed children, the proportion being four to one.

(3) Speech defects are six times as frequent in the mixed handedness groups as in the pure handedness groups.

(4) " Crossing " definitely increases the tendency to speech defect.

(5) Nervous disability is two and a half times as frequent in the " crossed " groups as in the " pure " groups.

Sufficient evidence has been brought to light in this investigation to warrant the following conclusions :

(*a*) Individuals of pure type are more stable in nervous constitution than individuals of mixed type.

(*b*) The tendency to speech disturbance is fundamentally related to departure from uni-laterality of function in the native organization of the nervous system which expresses itself in mixed handedness and crossing between eye and hand.

(*c*) While sinistrality is apparently not correlated with either superiority or inferiority of intellect, marked departure from uni-lateral functioning is definitely related to complications in the nervous organization which may hinder the adjustments necessary for the attainment of school efficiency at the level of native ability.

These conclusions are tentative : further extended investigation is necessary to test the underlying hypothesis, which seeks to throw light upon the relationship between sinistrality and speech, " a connexion which is obscure and indeterminate, and yet is demonstrably real."*

*" Left-handed Children." P. B. Ballard. *Times* Educational Supplement September 20th, 1924.

Children's Difficulties in the Study of Mensuration.

By E. M. Renwick.

The concept of area seems, in many young minds, to be present in a form which is not vivid, or clearly discriminated from the concepts of length and volume. In the following record, the writer describes the special methods which she adopted, in order to try to give precision to her pupils' conceptions of length, area, and volume, as distinct physical properties of lines, surfaces, and solids, different in kind, and requiring different units for their measurement. She records such of their questions and comments as appear to her to throw light on their ways of thinking and learning, and finally she describes the test by which she attempted to assess the results of her teaching.

This test unexpectedly revealed the fact that, in spite of their special training, the children could not even distinguish the *nature* of a number of practical problems on mensuration. Hence it seems that the evidence points to the existence of a psychological problem of considerable interest and complexity, a problem which, in view of its important bearing on educational practice, calls for careful and thorough investigation.

The subjects of the experiment were the ten members of the preparatory form in a municipal high school for girls. They are bright little girls, all from prosperous homes, and with every appearance of normal physical, intellectual, and moral development. Although they have not been subjected to any of the usual intelligence tests, it is almost certain that the level of intelligence among them is higher than it would be among ten girls of their age chosen haphazard. They seemed to like their arithmetic lessons. They applied themselves with energy, often with enthusiasm, to the work they were invited to do, asking questions freely, and discussing their difficulties without restraint. They were not unduly hurried through the course in mensuration, though the absence for some weeks of one member of the form necessitated the postponement of nearly all the lessons on volume until the third term. When the course began, in October, 1927, their ages ranged from $9\frac{1}{2}$ years to $11\frac{1}{2}$ years, the average age of the class being 10 years 8 months.

The final test was set at the end of June, 1928, just before the terminal examination, and the lessons were given at irregular intervals during a period of about eight months. In all, twenty-four forty-minute lessons were devoted exclusively to the study of mensuration, the simplest rules only being considered. The slower pupils and those who missed lessons owing to occasional absence from school took a little longer over the work. No pupil omitted

to perform any of the exercises which were essential to the complete course.

Some of the children came from schools in which they had already received instruction in the mensuration of the rectangle. They also worked, under the direction of another member of the staff, through a course in what the time-table called " Practical Mathematics," concurrently with the course described below, but in their discussions they made few references to the knowledge they had obtained from other sources, in spite of its direct bearing on the work they were doing.

The exercises were devised, as far as possible, to throw light on the *nature* of the spatial property which was being measured, fractions other than halves and all unnecessary complications in calculation being avoided. The jig-saw puzzle type of exercise was freely used in introducing the idea of area. In the work on volume, exercises in selecting and comparing preceded the measurements, models of different shapes being supplied, so that the children could choose from them pairs of models of approximately equal volume and test them by filling with small seeds the cases into which the models fitted.

The first exercises on the measurement of straight lines were carried out with squared paper divided into inches and tenths, or into decimetres, centimetres, and millimetres. These led to the use of the decimal point, which however was not introduced into the later exercises, as it proved to be in itself so difficult for some of the girls that it tended to withdraw their attention from the main purpose of the exercise.

The children then proceeded to try the effect of *bending* a line of given length, to make it enclose figures of different shapes. This was done first on quarter-inch squared paper, and later on millimetre paper. The word " perimeter " was taught and readily adopted by the class. The rectangle was studied more particularly, the relationship between length, breadth, and perimeter was recognized and stated, although no formula was learnt, and plenty of practice was given in calculating one of these three quantities, given the other two. The method of finding breadth, given perimeter and length, was by no means obvious to some members of the class ; one girl, who was particularly slow in discovering it, described it as " a catch." These exercises proved to be popular, and were often introduced, in the form of easy problems about rooms and gardens, into mental arithmetic contests, when the children prepared the questions for their " side."

The attention of the class was then directed to the fact that the figures drawn enclosed different amounts of space on the paper, the word " area " was given, and the units, square inch and square centimetre, were explained. It was noticeable that the children were reluctant to employ the word " area." In order to avoid it they used such phrases as " the squares in the figure," " the space inside." It was several weeks before the use of the word came to be automatic, and even then one girl insisted on pronouncing it with the stress on the second syllable !

In the first drawing-exercise on area, the girls drew on sheets of squared paper (inches and tenths) several figures, each having an area of one square inch, beginning with the square and proceeding to rectangles, L-shaped and T-shaped figures, crosses, triangles, rhombuses and grotesque irregular figures with astonishingly big perimeters. The exercise became a contest to see who could get the square inch with the biggest perimeter. The children checked one another's drawings, where necessary counting the hundred little squares in the figure. There was some speculation as to what the least possible perimeter might be, so a square and a circle of approximately equal area were drawn on the blackboard, and their perimeters compared with string. The exercises on the square inch were followed by similar exercises on the square centimetre and the square decimetre.

Even at this stage it was apparent that the exercises were giving rise to confusion in the minds of some of the girls. For instance, in an example of the type shown in Fig. 1 a girl attempted

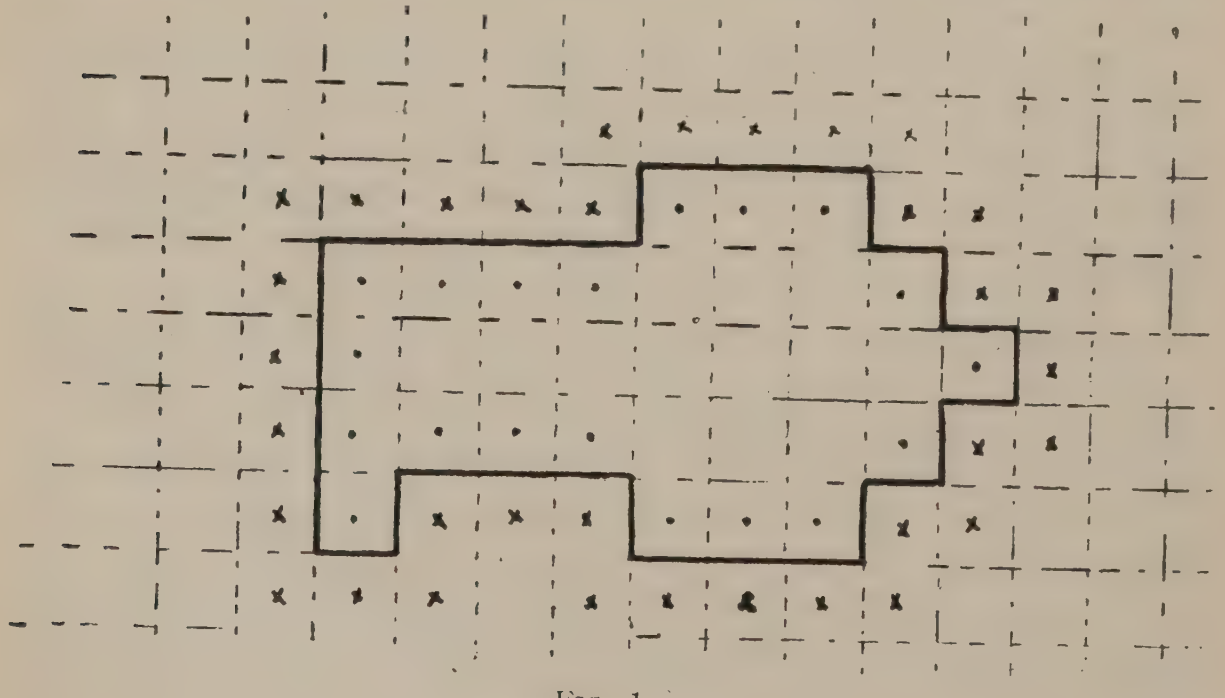


FIG. 1.

to find the length of the outline of the figure by counting the squares marked with crosses, justifying her procedure by saying that this gave the number of squares *round the figure*. Another girl counted the squares shown dotted.

When the children had apparently become quite familiar with the units, square inch and square centimetre, they prepared for the next exercise by cutting out from squared paper an assortment of figures, each having an area of one square inch.

The six shapes chosen are shown in Fig. 2.

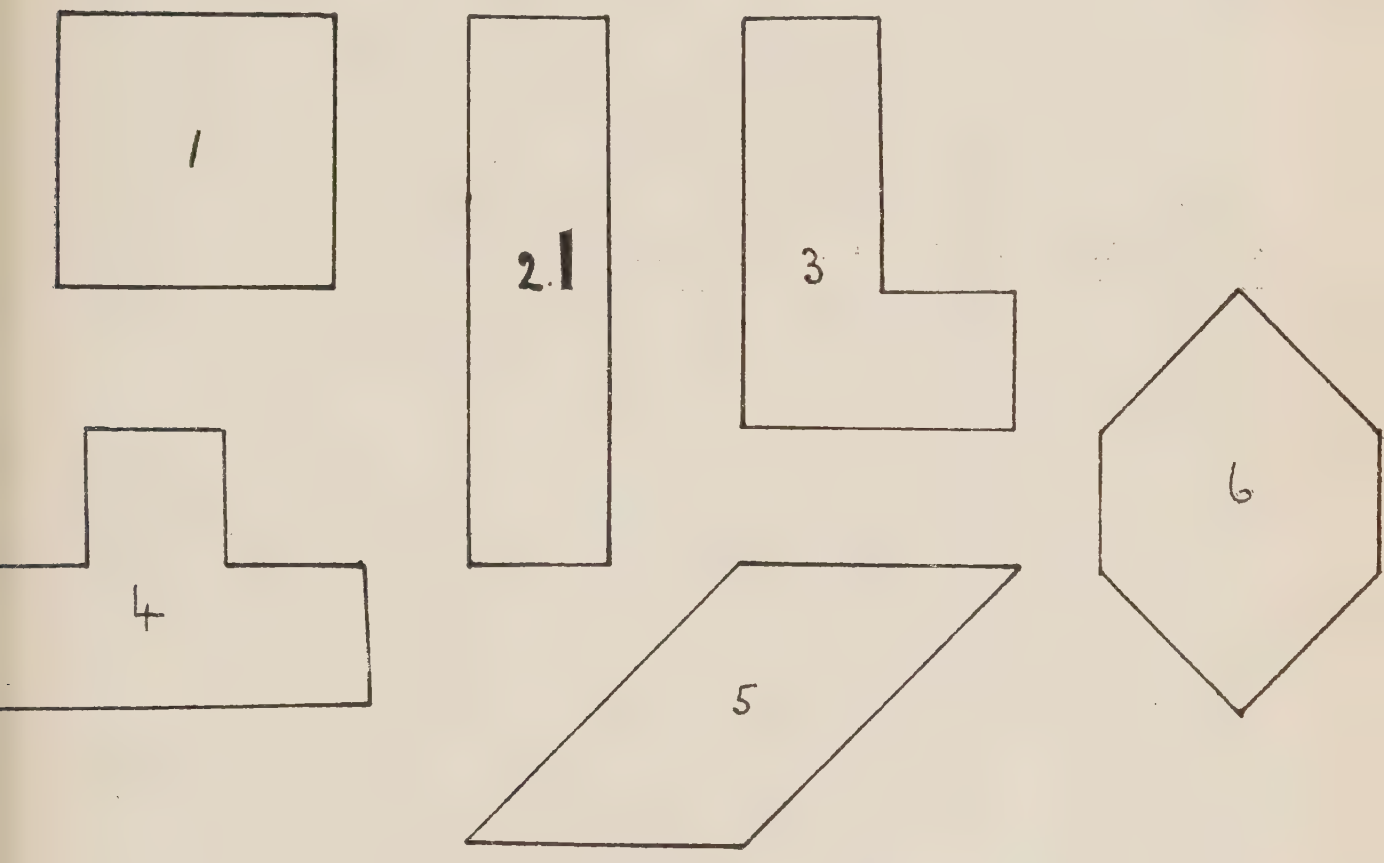


FIG. 2.

Each child obtained a supply of about four pieces of each shape.

The irregular figures of which the area was required were drawn by the teacher on sheets of unlined paper and distributed among the pupils. Each girl was required first to *estimate* the area of the figure, then to measure it by placing her small figures on it so as to cover it without overlapping, and counting the number of pieces used. In suitable cases the perimeter was also found. The areas of the figures varied between three square inches and eleven square inches. The girls tested ten to fifteen figures in this way, their improvement in ability to estimate area as the exercise proceeded affording them a good deal of gratification.

Another exercise of a similar type was, after an interval, carried out as follows :

Each girl drew an irregular figure on squared paper (inch or centimetre), dissected the figure, drawing lines so that its area could be checked readily by the teacher, traced the outline on tracing-paper and indicated the unit employed (square inch or square centimetre) by drawing a square by the side of the figure. The children then exchanged tracing-papers, estimated areas, measured them by placing the tracing-paper over squared paper, in suitable cases found perimeters, and presented their results for verification to the girl who had drawn the figure. In doing this exercise, the quicker pupils introduced easy fractions.

It was considered expedient* at a later stage to introduce still another exercise of the jig-saw puzzle type, a greater variety of shapes in the pieces being employed. These included circles, semi-circles, and quadrants of circles, and the exercises were made rather more difficult by arranging them so that certain areas had to be subtracted to get the final result. An example of one of these exercises is given in Fig. 3. The quickest children completed twelve of them in the lesson.

The rectangle was then studied, the children being encouraged to find for themselves short ways of obtaining the area, instead of counting squares. Some of them saw the rule at once, but others counted the squares in rectangle after rectangle, till it seemed as if the rule would never occur to them. In the end, however, all acquired the habit of multiplying length and breadth.

In order to give practice in applying the rules for perimeters and areas of rectangles, and to help the slower children to remember them, exercises were set, both as homework and as classwork, on filling in the empty columns in such cases as the following :

	Length.	*Breadth.*	*Perimeter.*	*Area.*
1	6 cm.	?	18 cm.	?
2	?	2 yds.	?	12 sq. yds.
3	?	?	22 ft.	30 sq. ft.

Whole numbers only were used, and sums like No. 3, which proved rather difficult, were worked by trying different pairs of numbers.

*A girl in a higher form had asked the question, " How can a gramophone record have an area in square inches, when it's round ? "

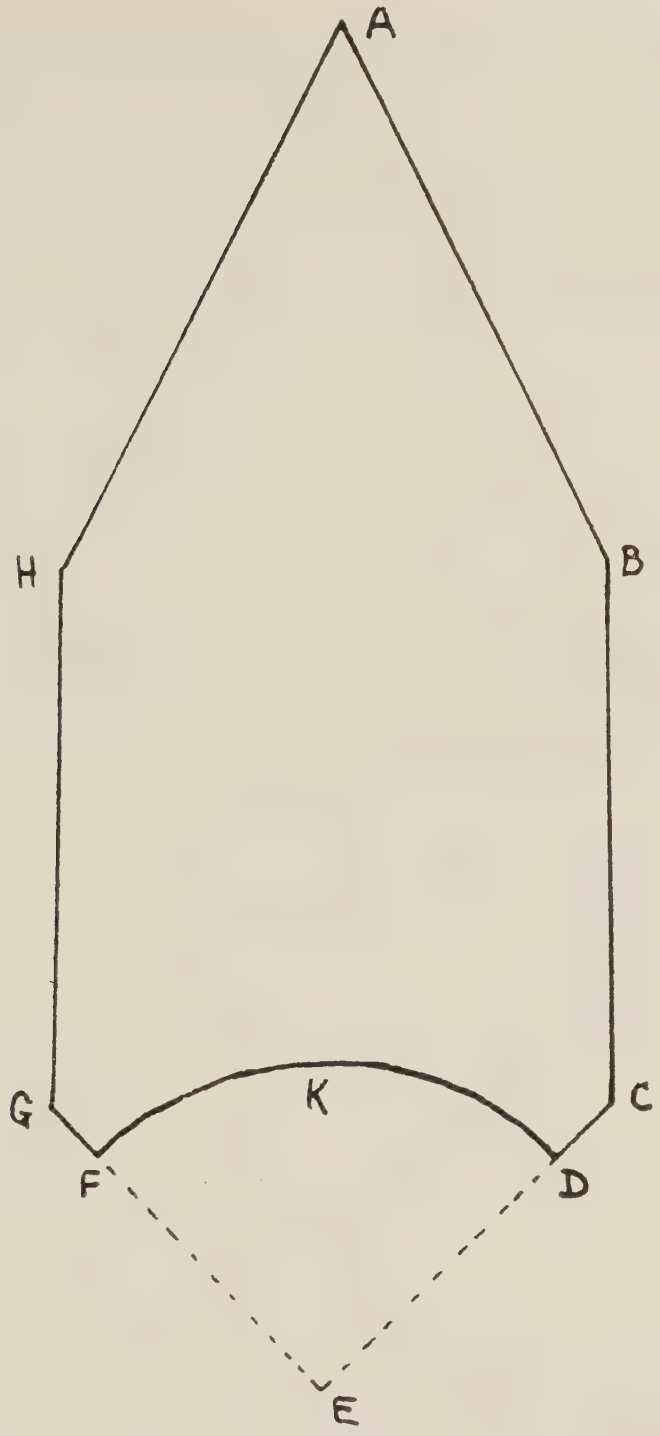


FIG. 3.

No. 12. Find the area of the shaded figure in square inches, by taking the area of the quadrant DKFE from the area of the whole figure ABCEGH.

There was still plenty of evidence that confusion of mind existed (between perimeter and area). Questions were often asked showing that in stating a result, the name of the unit was assumed to be a matter of no importance, "square inches" and "inches" being used by some girls quite indiscriminately. (This may have been due to their having done too much work on squared paper.) Such

remarks as, "My oblong has its area and perimeter exactly the same," were frequently made, and continued in spite of reiterated explanations.

A mistake made by a child who was working through some exercises on squares and square roots* will illustrate this point. The children had drawn squares to show the squares of the natural numbers up to 12, they had learnt by heart the series of statements ending with "The square root of 144 is 12," and they had practised writing these in the form $\sqrt{144}=12$.

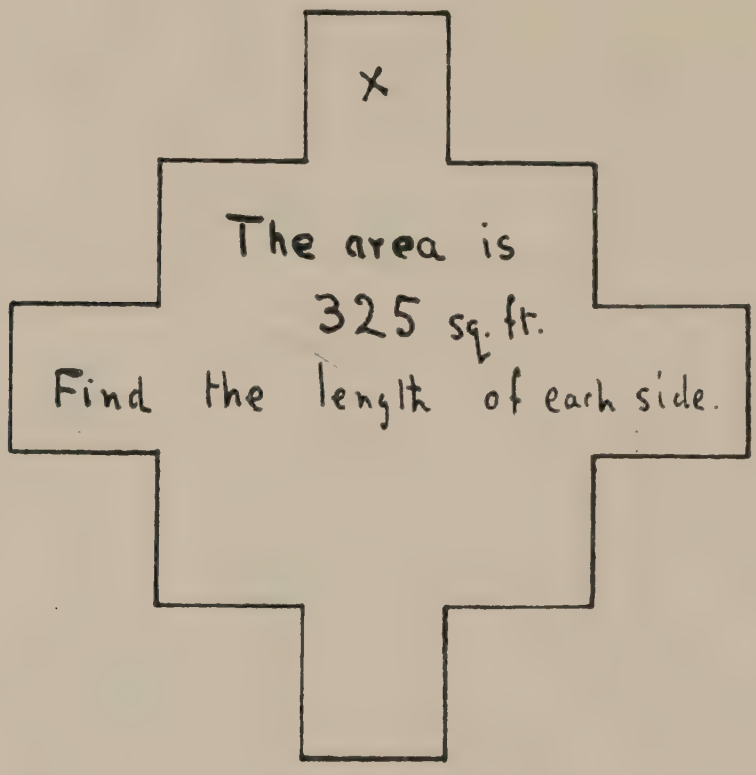


FIG. 4.

They were now applying their knowledge to exercises such as the one illustrated in Fig. 4. One child, who was usually among the first to finish, was still struggling with this problem when all the rest (with more or less help) had obtained the result. When offered assistance, she repeatedly refused, saying, "Don't tell me, it's nearly come out!" but at last she brought her paper to the mistress and asked for help after this fashion, "I got 13 squares, so I divided by 13. That gave me 25. Well, five fives are 25, so that gave me five. I'm doing that square there," pointing to the one marked with a cross, "and it has three sides, but three won't go into five, and I don't know what to do with the two over. They can't be inches!"

*These were not counted as part of the course in mensuration.

The same confusion of mind revealed itself again when, during the third term, a revision exercise was set in the following manner : An envelope containing twenty-four small cards was given to each child, who could recognize her own cards by their colour. The areas and perimeters of twelve rectangles were written separately on the cards, and the rectangles to which they referred were drawn on sheets of unlined paper, which were placed on desks in different parts of the room.

Each rectangle was divided into inch squares or centimetre squares by dotted lines, but no measurements were given. The game consisted in distributing the cards as quickly as possible, placing each one, face downwards, near its appropriate rectangle. Mistakes disclosed themselves towards the end, competitors who were left with one place to fill, and one card which did not fit the place, being compelled to seek a wrongly-placed card, and thus lose their chance of finishing first. The mistakes made were chiefly due to confusion between area and perimeter.

The first mention of volume was made in the course of a lesson in February, when the pupils were shown three objects, viz. :

(1) A wooden decimetre cube with detachable parts to facilitate demonstration that it could be made of 1,000 centimetre cubes ;

(2) a hollow decimetre cube of sheet tin; and

(3) a cylindrical litre measure.

The children saw at once that the two vessels would hold the same amount of liquid. Various sentences about the objects under inspection were composed, the word " volume " being introduced into each sentence, but at first this word was even more unpopular than "area " had been. In this lesson, some time was spent in examining cubes of various sizes, and in cutting up paper into shapes that could be folded to form hollow cubes. No further progress was made in the study of volumes until the school reassembled after Easter, as one of the girls was absent for several weeks, but reference to it was occasionally made, and the exercises on perimeter and area were from time to time revised.

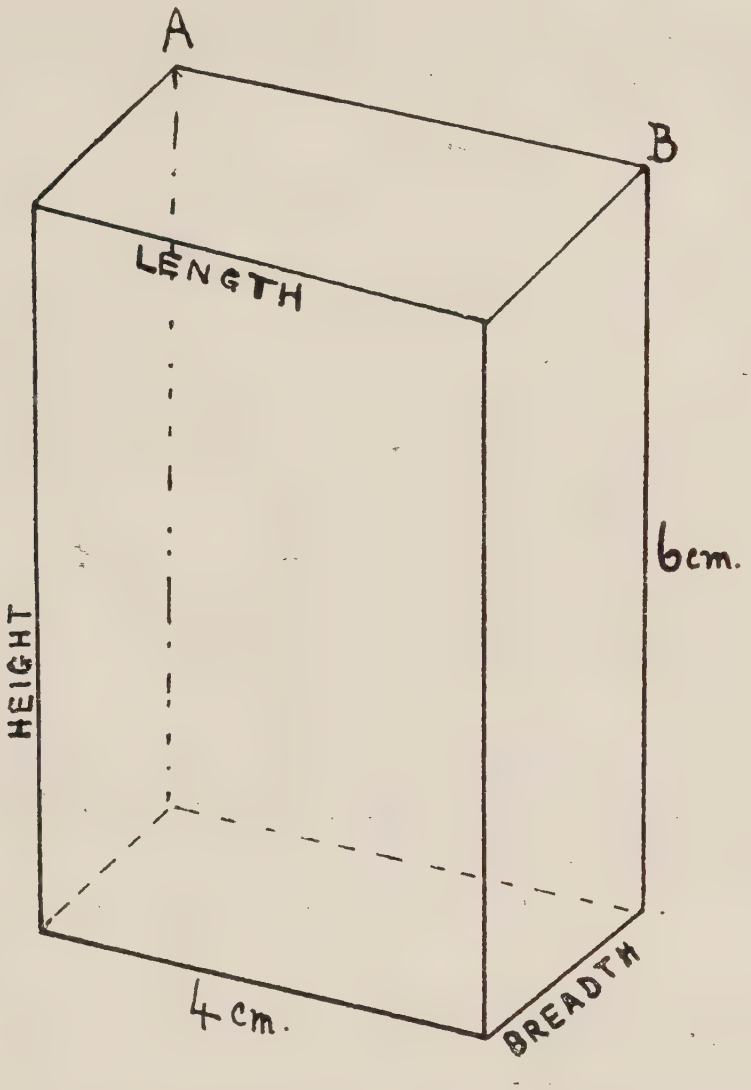
The first practical exercise designed to make clearer the meaning of volume was carried out as follows : A number of wooden models

(about thirty), ranging in volume from about 5 cc. to 120 c.c., were placed on the table, and the girls were asked to select any pair of models which appeared to be about equal in volume. This done, they obtained the two cases into which the selected prisms or cylinders fitted, and tested the accuracy of their judgment by filling one case with small seeds, which they then poured into the other case. The exercise appeared to be much enjoyed, and in the course of it the children became very proficient in making their selections. In the next exercise, pairs of solids selected by the teacher were placed in front of the class, and the girls were required to say which one they judged to have the greater volume.

The Rectangular Prism was now examined. Each girl was provided with a number of centimetre cubes made of wood, and a rectangular block of which the length, breadth, and height were each a whole number of centimetres. It was explained that volume could not be measured so simply as length, and that the shape of this solid made it the easiest kind to start with. The use of the unit, cubic centimetre, was discussed, and the children were asked to find the volumes of their blocks in terms of this unit. At the first attempt most of the girls built with their centimetre cubes a prism of the same size and shape as their rectangular block, but when it was suggested that they should find a quicker way, in dealing with the second block they completed the bottom layer of cubes only, and multiplied this number by the number of centimetres in the height. Only the best pupils, however, proceeded to deal with their third prism without having recourse to the small cubes, and by the end of the period, only six of the ten pupils had discovered the rule so as to be able to state readily the volume of any rectangular prism drawn on the blackboard with its dimensions marked. The remaining four spent part of another lesson working at this exercise, and had to be helped individually by questions and suggestions. When asked to state the rule they had discovered, most of the girls expressed it in some such words as these : " Find how many cubes in the bottom layer by multiplying length by breadth, and multiply this by the number of layers you need." Two more lessons were spent in studying the faces and edges of the prism, and a third lesson was devoted to rapid mental work without the apparatus, prisms being merely sketched on the blackboard.

The last paper set, which was worked by the children with such assistance as they cared to ask for, is here reproduced in full, together with some notes on their questions and methods.

EXERCISES ON LENGTH, AREA, AND VOLUME.



Question 1.—The shaded face of this prism is 18 sq. cm. in area. Find the breadth of the prism.

Answer here.....

What is the volume of the prism? .....

It has 4 upright faces. You have been told the area of one of them (18 sq. cm.). Write down the area of each of the other three :

(1)..... (2)..... (3) .....

What is the perimeter of the shaded face of the prism? .....

What is the perimeter of the oblong base of the prism? .....

What is the area of the oblong base of the prism? .....

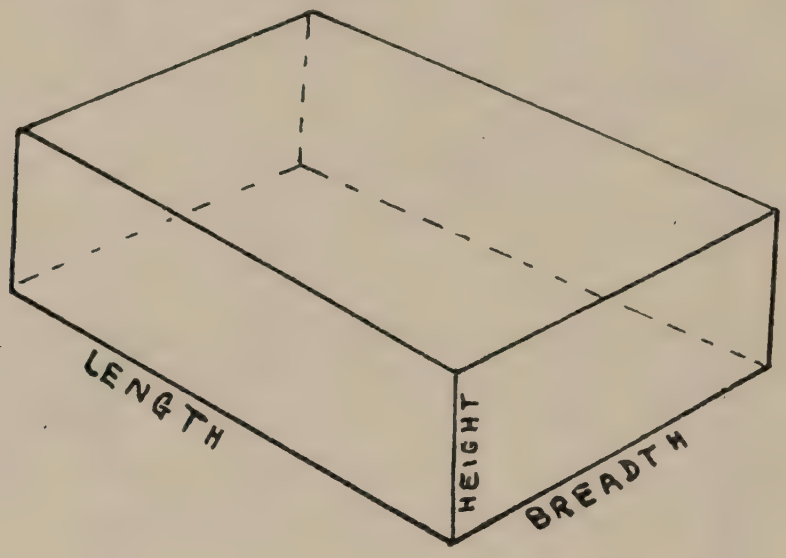
What is the whole area of all six faces of the prism? .....

If you had to stick strips of fancy paper along all the twelve edges of the prism, what length of the fancy paper would you need? (You would need 4 pieces for the upright edges, 4 pieces the same length as AB, and 4 other equal pieces.)

Answer.....

How much would it cost you to paint all the outside of the prism (its surface) if every square centimetre cost a farthing? .....

If the prism were an empty box, how much would it cost you to fill it with ointment at 1d. per cubic centimetre? .....



Question 2.—The perimeter of the oblong base of this prism is 28-in. The length of all its 12 edges added together is 64-in. Find :

(1) The height of the prism .....

(2) The length, if the shaded face has an area of 16 sq. in. .....

(3) The breadth .....

(4) Area of base .....

(5) Area of top .....

(6) Area of one of smaller upright faces .....

(7) Volume of prism .....

(8) If it were made of sheet tin (an empty box), what would it cost to fill it with a liquid at 1d. per cubic inch? .....

(9) If it were solid, made of stone, how many prisms like it would you need to make a big block 24-in. long, 12-in. broad, and 10-in. high?

The whole of Question 1 was worked with few mistakes and few questions. Every child needed a little help with the first part of Question 2, in some cases the merest hint sufficing, but the ninth section of this question proved to be too difficult for the weaker pupils. One of the older girls, who spent two whole periods in completing the paper, set about solving her problem in this way : " The lengths are 8-in. and 24-in. That makes 3." Wrote down 3. " The breadths are 6-in. and 12-in. That makes 2." Placed a 2 to the right of the 3. " The heights are 2-in. and 10-in. That

makes 5." Placed a 5 to the right of the 2, the digits being separated by commas. A long pause. Asked, "What are you going to do with the 3, 2, and 5?" she replied: "That's what I don't know." Another pause, then, doubtfully, "What about adding?" The solution had to be obtained by a slow and painstaking consideration of the meaning of each step, a large box and a small prism being used to help the child to realize her procedure.

Another of the older children, who also was helpless in face of the difficulty of this question, seemed very crestfallen at her failure. She went round to some of her friends and complained, "I had to be shown how to do the last one."

A girl who spent nearly two periods on the paper decided to answer this part by dividing the volume of the block by the volume of the prism. She seemed surprised to learn that her method was right.

The two youngest girls were the first to finish the paper, the youngest taking only about half an hour, and needing practically no assistance. In the ninth part of Question 2 these two children considered length, breadth, and height separately. The five others who answered this part without assistance did it by dividing the volume of the block by the volume of the prism.

THE FINAL TEST.

This was set on the day following the completion of the paper described above. The children were told that the mistress wanted to find out by means of this test whether her way of teaching them mensuration had been a good one. They were urged to think carefully before filling in their decisions. Only one child asked a question: "Are the india-rubbers in Question 9 supposed to be of the same quality?"

The Test with the Answers received to each Question.

A.—(1) Find the area in square inches of an oblong 12-in. long and 4-in. wide.

(2) Find the volume in cubic inches of a brick measuring 9-in. long, 6-in. wide, and 4-in. high.

These two calculations were performed correctly by every girl, though there were three mistakes in naming the units.

B.—In the following questions, you are not expected to work anything out. Just say *what sort of a sum* it would be, if you could do it—a sum about length, or about area, or about volume. Write

the word in the space above the dotted line in each question. The word you write must be "Length," or "Area," or "Volume"—no other word will do. If you don't know, write "not known."

Example.—Finding how much grass seed would be needed for a lawn of a certain length and breadth is an exercise on..... The missing word here is "area."

(1) Finding the *cost of marking out a tennis court* at so much a yard, is an exercise on.....

Four wrote "length," six wrote "area."

(2) A box of a certain length, breadth, and height is held up in the light so that its shadow falls on a screen. You have to find *how much shadow* is on the screen. Is this an exercise on length, on area, or on volume?

Answers: 1 length, 6 area, 3 volume.

(3) Finding *the cost of paper needed for the walls and ceiling of a room* if you know the length, breadth, and height of the room, is an exercise on.....

Answers: 6 area, 4 volume.

(4) If you had a sheet of plate-glass, and you took it to a glass-cutter, and asked him to *cut with a diamond a pane of glass* of a certain length and width, when he worked out the cost, he would be doing an exercise on.....

Answers: 2 length, 7 area*, 1 volume.

(5) Finding *how long it takes to go round an oblong field,* so many yards long and so many yards broad, at a certain rate of walking, is an exercise on.....

Answers: 8 length, 2 area.

(6) A wooden tea-chest is made of six oblong pieces of thin wood, fastened together by means of *narrow strips of tin,* nailed along the edges so that the pieces of wood form a box. Finding *how much of the tin* is needed is an exercise on.....

Answers: 8 length, 1 area, 1 volume.

(7) If you had a round jar of ointment, and you had to find *how many small pill-boxes* you could fill with the ointment, knowing how high and how wide the jar and the pill-boxes were, you would be working an exercise on.....

Answers: 1 area, 9 volume.

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*This question is generally misunderstood by children. They assume that the glass is to be paid for.

(8) Finding the *amount of barbed wire* needed to make a fence round a hockey-field, if you know the length and breadth of the field, is an exercise on.....

Answers : 10 length.

(9) If there are two india-rubbers, the dearer one will be the one that has the greater.....

Answers : 2 area, 7 volume, 1 not known.

(10) Suppose you had a box of a certain length, breadth, and height. You have to decorate it by gumming narrow strips of fancy gold paper along all its edges (not all over the box—just the edges), Finding *how much paper* you need is an exercise on.....

Answers : 8 length, 2 volume.

Number of girls with 10 right	0
,, ,, ,, ,, 9 ,,	3
,, ,, ,, ,, 8 ,,	1
,, ,, ,, ,, 7 ,,	1
,, ,, ,, ,, 6 ,,	2
,, ,, ,, ,, 5 ,,	2
,, ,, ,, ,, 4 ,,	2

In discussing the test, after all the papers had been handed in, the children were not able to throw much light on the causes of their mistakes. They did not appear to have been misled by the fact that, in the example illustrated, the calculation of the amount of grass seed might have been taken to be an exercise on volume. If they had thought of this, accustomed as they were to full and frank expression of their perplexities, they would at once have drawn attention to the ambiguity of the question. One girl said she had written " area " in Question 9 because she thought that the big india-rubber might have had a hole in it ! When the youngest child was asked why she had written " volume " in answer to Question B2 (the shadow of the box), she replied : " I don't know. I thought it *was* volume." She had written " volume " also for the question about wall-paper, and had afterwards erased the word and substituted " area." She is a very intelligent little girl, but her mistakes prove that the exercises she had performed with so much zest had been quite unproductive of thought as the adult conceives it. She had made no useful generalization. Else why should she seize on an accidental and irrelevant similarity, such as the giving of three dimensions, to associate the " shadow " question with her experiments with the centimetre cubes rather than with her jig-saw

problems, to which it bears a resemblance which is fundamental and significant? In the test she had four wrong answers, and some of her correct answers may be suspected to be the result of mere chance.

On the other hand, two of the older girls give evidence by their answers that they *may* have acquired adequate concepts of area and volume. They had each one error—they wrote "area" in the question about the glass-cutter—and this error may have been due to their misunderstanding the question. The only other girl who had nine correct answers wrote "volume" in answer to the question about wall-paper, a mistake which indicates real ignorance, so that, at the best, only two girls out of ten can have assimilated and interpreted their experience so as to derive from it the true knowledge which must form the basis of further mathematical study.

It was, indeed, the writer's experiences in teaching mathematics to older girls who had no special aptitude for the subject which made her doubtful of the power of young children to form the concept of area without more careful teaching than is usually given. Many girls of thirteen and fourteen cannot deal satisfactorily with a test of the type described above. When questioned they will sometimes admit that they decide by the number of dimensions given, and this seems to be the criterion employed by most of the young children who took the special course. Some of these children were astonished and mystified when they found that their criteria had led them astray. They were so perplexed that it was felt to be unwise to persist in pointing out their errors. It may be that the concepts will develop as their minds mature, but they are already (September, 1928) in higher forms where most of them, in accordance with the custom of the secondary schools of this country, have started the study of algebra, a subject which demands the clearest comprehension of the nature of area as a preliminary to the understanding of the simple formulæ by which its usefulness is demonstrated to the beginner.

Here, it seems, is a situation in which the class-teacher must ask for the assistance of the psychologist, desiring him to discover, if possible, some effective method of teaching the elements of mensuration to girls of ten or eleven.

The Work in English in Training Colleges.

A Memorandum drawn up by a Sub-Committee of the English Section of the Training College Association.

INTRODUCTION.

THE AIM OF ENGLISH TEACHING.

Not the least significant sign of development in the present century is the gradual widening of the conception of the scope and nature of education. This perhaps manifests itself most clearly in the conviction that education should be first and foremost a process whereby mind is trained and character formed. The teacher, instead of setting himself to store a receptive memory with useful facts, is now concerned primarily with training the mind to discover fact and interpret experience for itself and to relate that experience to life as a whole.

This widening of the educational horizon is having far-reaching effects not only upon teaching methods within the profession, but also upon the teacher's relationship to his social environment and the claims that Society makes upon him. Since it is now realized that his function is not merely to provide his children with the rudiments of knowledge, but to prepare them as far as may be for the whole of life, he necessarily touches their lives and interests at a thousand points undreamed of when the system of public elementary education began.

Hence we can no longer look upon a teacher's training period merely as a time during which he is taught how to impart knowledge which has been supplied to him for the purpose, nor will his sphere of influence be determined by school hours.

A future teacher must be considered as an individual with an increasingly important place in the social system of which he is a part, no less than as a member of a human profession. In both capacities he has a duty towards the further development of his own powers, and both aspects must necessarily be taken into account in his training. It follows that the subjects of the curriculum are to be studied with a view to the wider possibilities and greater responsibilities which await him as an individual and as a teacher.

In no subject is the change of outlook indicated above more apparent than in English. The great possibilities of the mother tongue, as a means of culture no less than as an instrument for the acquisition of knowledge, are beginning to be understood, so that

the highest qualities both of natural ability and of technical skill are willingly devoted to its service.

All teachers in elementary schools are expected to be able to teach English subjects and, in a narrower sense, to "teach English." We require of all students, as a minimum, an ability to speak and write their own language with reasonable ease and correctness, and the skill to pass on this power to classes who may come to them extremely restricted as to vocabularies and partially or wholly illiterate. Besides this they must have some first-hand acquaintance with good literature and some power to discriminate between what is fundamentally good, whether expressed with simplicity or with fitting ornament, and what is childish, specious, or merely florid. On the professional side, again, they must know how to lead their children to delight in what is good and avoid what is poor. It cannot be too strongly emphasized (and herein lies the clue to the teaching of English) that the students' own knowledge of literature, if it is to be of the smallest service to them or to their pupils, must be the outcome of a genuine and personal love of what is good and must include a store of material that each has discovered and adopted for himself. Students sometimes come into college having a nodding acquaintance with certain masterpieces of English literature, and a set of acquired "opinions" with which they have perforce been provided for examinations. These are as useless for any vital purpose as is a Sunday religion of mere pious observance, and it speaks well for the teachers who work under the compulsion of examinations (as well as for the deeply rooted literary instincts of our race) that such a method often does not result in an active distaste for literature. Notes on literature and what may be called "induced appreciation," no matter what the skill and enthusiasm of the lecturer or the excellence of the text-book employed, cannot in themselves give a sufficient basis for the teaching of even elementary English, any more than a course of aeronautics can fit one to be a flying instructor. Only those who can fly alone can enable others to do so. Therefore, and this is the key to the whole situation, the study of English literature and language in a training college must be directed mainly towards endowing the student with the means of enriching his own mind, developing his own critical sense, and increasing his sensitiveness to the beauties and subtleties of the English language, while he must learn how to guide children to obtain that endowment for themselves.

Such an equipment demands a habit in reading of seizing on what is essential in chapter or volume and training in the use of

reference works and libraries. The college library should have its English Section well stocked with drama, poetry, fiction and books of reference and should be constantly used by the students, so that they will receive a preliminary training in the use of libraries, and will be able later to take full advantage of the wider resources of public libraries. All teachers should have some idea of what material exists, how to obtain access to it and how to make use of it. They must be trained to digest material so obtained, to compare different views or pronouncements on the same subject, and, as far as their own power goes, to judge between them. That is they must be able, in the wider sense of the words, to read, take notes and make their own inference and to follow up any line of investigation suggested by their own or their children's interests. The student should also have acquired the habit of demanding an absolute sincerity from himself and his author. This, allied to the recognition that any opinion he may form is to be regarded merely as a stage in his progress towards enlightenment, is the only sure foundation for a right critical taste, and at the same time it demands of the student an increasingly high standard of precision in the use of words and phrases. During his college course he should get to know as varied an assortment as possible of standard works in English. These should be studied primarily for his own development ; his college training will, also, reveal to him what part of these works is suitable for use in schools and how to present them to children at various ages and stages of experience. It is, we consider, a mistake to assume that literature for children may be of a less fine quality than that suitable for adults. There must be, of course, in certain cases a difference of theme—" Julius Cæsar " is suitable in schools while " Othello " is not—but experience shows that no literature can be too great or too difficult for children, provided only that it touches their own experience at some point and that the language in which it is written is not obsolete or otherwise too difficult. What is needed in the teacher is a recognition of the point of contact and skill in so presenting the subject that the pupil is made aware of it too, and that it will be the function of the training college to provide.

To sum up, the teacher leaving our training colleges is expected to realize that literature is not a mere academic subject, but is of the very substance and stuff of which our lives are woven, and that his native language is a sure and flexible instrument, the right use of which is not a duty confined to school hours, but is an intimate and personal concern—in which he studies to give his children their part.

Naturally all students differ in literary ability and in language-sense ; they differ too very materially as to the handicap with which they start, but all should learn at college to approach the subject of English with directness and sincerity and each should be given the means to follow a path which, starting from his own mental experience, leads ever outwards and upwards.

THE WORK IN ENGLISH IN TRAINING COLLEGES.

The work in English in the colleges falls into three divisions :

(A) Oral work, including speech training and oral expression, the object of which is to enable the student to develop fluent and attractive speech.

(B) The study of the writing of English, sometimes spoken o as language study, intended to develop the power of competent written expression and of exact understanding of written English.

(C) The study of literature, that is, the development of ability to read with understanding and sensitiveness the works of our poets and prose-writers.

The proportion of time that should be given to oral and written work in English is a vexed question. Probably the majority of the colleges give to oral work about a quarter of the time available for English. Some give as much as a third to the different branches of oral English : Reading, story-telling, dramatic work, discussions, and debates.

In view of the fact that the student, when a teacher, even while avoiding the " talk and chalk " pitfall, must spend a considerable proportion of his time in school in oral work, this proportion, i.e., one third, does not seem to be excessive. It must be borne in mind that the one model of good speech for many pupils is what they hear from their teacher, and, as has been already mentioned, the teacher's success in every lesson depends largely on his command of English.

(A) The Study of Speech.

It is no uncommon thing to find a student excellently equipped mentally but lacking the mechanical power of communicating his ideas to others. This is a fatal deficiency in a teacher, for a very great part of his work lies in talking. In every lesson the teacher's speech plays an important part. In history, geography, and English lessons, especially in the lower classes, all the information is conveyed orally from the teacher to the child. In science and

mathematics lessons all explanations are made orally. In all lessons the degree of attention of the children is tested by oral questions, and in every well-conducted class a considerable amount of time is devoted to discussion. It is obvious, then, that if the teacher cannot speak clearly, or if he has a weak voice or an unpleasant discordant voice, or if he speak with bad accent, his efficiency is impaired. The chief means by which children are led to appreciate good prose and poetry is through hearing it well read and recited. A teacher who cannot read well must be a maimed teacher of literature.

Again, children are very imitative. Unconsciously, as well as consciously, they copy the peculiarities of the teacher. A teacher whose speech is bad is not only likely to be inefficient; he is dangerous. It may be added that, if every teacher had a pleasant voice, there would be considerably less strain on the part of the children, for there is nothing more unpleasant to children in school than the discordant sound of harsh voices.

There was a time when little attention was paid to the pronunciation of children in elementary schools. It was accepted that in the short period of school life no important change could be wrought. The general idea was that although a child might be taught to speak with an exaggerated correctness in school, directly he passed the school gates he relapsed into his own particular vernacular. It seemed foolish to waste energy on an assault when the conquest was so doubtful.

In recent years this theory has been largely abandoned. In many schools attended by very poor children the speech is clear and remarkably correct. The teachers have discovered that steady insistence develops the habit of good speech much more rapidly than would be expected, that if children speak well for five and a half hours each day, there is a chance of good speech becoming usual. In English lessons it is imperative for children to speak correctly. It is realized that if a child pronounces the words of a poem with violent accent he is losing the *sound* appeal of the poem, he is not really reading the poem written by the poet, but an imperfect and perhaps ludicrous paraphrase made by himself. From the point of view of efficiency, then, it is important that every teacher should speak clearly and correctly.

It is for such reasons as these that in the last fifteen years there has been a marked increase of interest in this particular department of training college work. No rules have been laid down concerning such work, and no fixed inelastic test has been devised by the Board of Education. Years ago the inspectors used to examine

the reading and reciting each year, but this test was abandoned some time ago and in its place came the suggestion that all students should be taught to speak. The response has been remarkable. Every college makes some attempt to deal with the question. Usually (but not invariably) the English teachers have charge of the speech training of the students, but where the English teachers have no special knowledge of such work it is not unusual to bring in a speech expert. When the students are out on school practice the supervisors report on speech and grave cases of bad speech receive special attention. During the course of some years of experimenting a system has been evolved something like the one outlined below. It would be wrong to say that every college carried out this scheme fully. It may be taken as being the amalgam of the speech training courses of many colleges.

(1) *A Course in Phonetics.*

The students will be taught how to develop their vocal organs, how to avoid shouting, muffled and hollow voices, how to make the sounds of the language, how to treat children who have speech defects, how to represent the sounds by phonetic symbols—so that they can practise the rapid recording of sounds. The course in phonetics is designed to give the student a basis upon which he can build, to teach him by the analysis of sound that the first principle of good speaking is good listening.

(2) *A Course in Reading and Reciting.*

The syllabuses in English are very elastic and different colleges have different methods, but students are given frequent opportunities of reading and reciting out of books set in their English courses, and from books of their own choice. The aim of the reading and reciting lessons is to obtain clear modulated rhythmical reading, free from ostentation.

(3) *A Course in Dramatic Work.*

This takes various forms. In most colleges at least one play is performed publicly each year, but it is also customary to give all students practice in acting in the class rooms. They will perhaps act scenes from the plays studied, or from stories adapted for dramatic purposes. In other words they will be placed under the same conditions as the children whom later they will teach, and so they get a foretaste of the delights and difficulties of such work. The acting of plays is the natural and popular method of entertainment on social evenings in most colleges.

(4) *A Course in Story Telling or Lecturing.*

In some colleges every student is required to prepare stories suitable for children. These stories are delivered in class, criticism following on the construction of the story and the speech of the student. Sometimes this is varied by calling upon the students to give short lectures on subjects of their own choice. The work of college debating societies, too, is of great value in training students to speak pleasingly and convincingly.

It is worthy of notice that the purpose of the speech training lessons is not that of turning out professional actors, reciters, or singers, but of developing a race of teachers who shall have pleasant voices, the ability to speak clearly and correctly and the ability to train children to speak well.

(B) The Study of Language.

In the reaction against the study of English authors almost purely from the point of view of philology, language teaching tended to fall into neglect, with the consequence that often general and vague impressions of an author's subject-matter were all that a certain type of student gained from the study of a writer. The necessity for close study and exact apprehension of an author's meaning was sometimes ignored, as was pointed out in the Report of the Departmental Committee on the Teaching of English, 1921. The pendulum has now swung back and great emphasis is being placed in training colleges on language study, that is to say, on the detailed consideration of an author's argument, the appropriateness of words to subject-matter, the choice of words and use of illustration, the rhythm of speech, and the technical devices of prose and poetry.

Though all training colleges would be agreed upon the importance of this study of language, their methods of dealing with the subject vary. Some colleges regard language as a separate study ; others regard it as arising out of the study of literature. The former consider a distinction should be drawn between the power of communication in English and the appreciation of artistry in words. The argument is occasionally advanced that while all students can appreciate the study of language, and while for all of them it is essential, some are lacking in the sensitiveness of imagination that would enable them to enjoy great literature. If this is so, the study of language should certainly be regarded as a separate branch of English work.

We do not, however, agree with this view. We think it arises from literature being presented to students which is unfitted to their stage of development, or which is foreign to their natural tastes. The student with no appreciation of literature is an almost unknown phenomenon in a training college, and we feel that for most people the study of the way a thing is said arises naturally out of appreciation of the thing said.

The study of language, then, should be very closely connected with the books the student is reading. His appreciation of the exact meaning of the author's words and expression leads him, in his own writing, to accurate and concise expression. The ultimate object of this work is that the student shall become more exact and forceful in his own speech. Students write many essays, we hope with the result that they learn to order their ideas and words more effectively in teaching and conversation. Some of the writing vocabulary should pass over to the speech vocabulary.

The scope of this work is best shown by some typical questions from examination papers on language. For instance in the Board of Education's Advanced Language paper for 1926, an unseen passage from Burke is set, with the following rubric :

(*a*) State shortly Burke's argument in this passage, and comment upon the manner in which it is developed.

(*b*) Explain exactly the meaning of the sentences (these occur in the passage given).

" The claim of the citizen is prior in time, paramount in title, superior in equity."

" No man can mortage his injustice as a pawn for his fidelity."

Frequently a number of proverbial sayings or pithy passages from authors are given, and the student is asked to explain them and to add illustration, comment, or criticism. Examples of such passages, taken from actual papers, are :

" Cast thy bread upon the waters and thou shalt find it after many days."

" ' A bully is always a coward.' This axiom contains a principle of compensation which disposes us to admit the truth of it."

" Hypocrisy is defined as the homage which vice pays to virtue."

"A man cannot fall off the floor."

A third type of question contained in most papers asks the student to compare two passages on the same subject. One may be verse, one prose ; one good, one bad ; or both good in different ways. For instance in one paper students are asked to compare Campbell's " Wounded Hussar " and Siegfried Sassoon's "Golgotha,"

both poems being in front of them. In another they are asked to compare some stanzas of Kipling's "Sussex" with a prose description of the South Downs.

Colleges have found that no test more surely reveals the strength and weakness of a student than a paper of this kind. The student whose reading conveys to him a general and hazy impression of his author's meaning is at a loss when confronted with demands for precise definition and a close rendering of the author's meaning.

(C) The Study of Literature.

When the Departmental Committee on the Teaching of English was sitting, there was much debate as to whether a course in English literature ought to be compulsory, as it is, for all students in training colleges. It was suggested that literature, which is an art, cannot be taught by compulsion. While agreeing with this, we have already pointed out that the student with no bent for any kind of literature is almost unknown and a wide syllabus allowing students considerable choice will enable them to read along the lines which appeal to them.

Some students have a great love of imaginative literature; others, with less æsthetic perception, are keenly interested in literature dealing with social, intellectual, and religious problems; some care only for modern literature, others love that of the past; some feel the strong appeal of poetry, others prefer prose. It must not be forgotten, either, that a student's attitude towards literature is often entirely different, at the age of twenty, from what it was at eighteen; and some learn to love literature during their college years; so that we feel, in spite of all arguments to the contrary, that English literature should still remain a part of each student's course.

The majority of the colleges still use the Board of Education syllabuses in English, though a considerable number use their own, and conduct their own examination in English language and literature, while taking the Board of Education essay paper. This applies both to the Ordinary Course in English and to the Advanced Course, which is taken only by those students who wish to make a special study of English and to carry their work to a higher standard.

The Ordinary Course literature syllabus for our students in the last Board of Education regulations includes one play of Shakespeare for detailed study, three other plays (by Marlowe, Sheridan, and Browning) an anthology of verse, selections from Wordsworth and Shelley, an anthology of prose, a collection of Essays, a volume of

Bagehot's Literary Studies, Raleigh's Shakespeare, W. H. Hudson's "Birds in a Village," and seven works of fiction. It is evident from the syllabus that a very wide field is covered, and though in their final examination students are expected to answer only five questions, they are advised to read at any rate not less than half of the works set.

Most of the colleges which prefer to use their own syllabuses set for study either a period of literature, or a movement in literature, or the development of a form of literature. Some, however, prefer a list of books and authors on the lines of the Board of Education syllabus as giving opportunity for a more varied course of work.

Some of the syllabuses might be called "Vocational," in so far as they have direct reference not only to the student's own needs, but also to the material he will use later in teaching children. In such syllabuses the student's attention is directed to books generally accepted as suitable for children.

Assuming, for example, that the central idea of the syllabus be the study of nature, the students will be asked to consider the various ways different writers have observed nature, and the different ways in which they have expressed themselves. They will read such books as "Black Beauty," "White Fang," "Uncle Remus," "Just So Stories," "Wild Animals I have Known," and will be encouraged to make an anthology of nature poems suitable for children. From these they will proceed to a study of such works as "Life of the Fields," "Afoot in England," "A Naturalist on the Amazon," "The Woodlanders," the poems of Wordsworth, W. H. Davies, and other nature poets, and students taking an Advanced Course will make a study from some wider aspect of the poems, novels, and essays dealing with nature.

In the same way were "Romance" the central idea to be pursued, the students might base their work on fairy tales, "Peter Pan," "The House of Pomegranates," "Rip Van Winkle," "Peacock Pie," and then proceed to the study of such works as "The Golden Age," "Dream Days," "Romance," "Christabel," "Kubla Khan," "The Ancient Mariner," and the lyrics of Shelley and Keats, the students taking the Advanced Course making a study of some aspects of "The Romantic Element in English Literature." In some colleges, whose work is differently oriented, students are given lists of books suitable for children and study them for themselves. The books so studied become the basis of the method lectures in English

The Advanced Courses in English are intended for the literary student who has chosen to make a special study of English literature, and they resemble English syllabuses at a university. They demand

scholarship and appreciation of form not to be expected of the student taking an Ordinary Course in English.

The aim of the work in this course is two-fold. It is intended for the student's own development, to enable him to carry his own work in the subject to a really high standard, to foster his love of literature and his realization of it as a vital force, and it is also intended to prepare him to become a teacher of literature who would be capable of organizing the work in the subject in a school, and advising his colleagues on syllabuses and plays.

The syllabuses for the Advanced Courses published by the Board of Education and those drawn up by the training colleges deal with such subjects as (*a*) The History of the English Drama and the conditions of its staging ; (*b*) The Period of the Romantic Revival; (*c*) Humour in Literature ; (*d*) The Mid-Victorian Period.

In many colleges all students are encouraged to do some independent work in English, in all, probably, an important feature of the English work is the thesis required from each student. This gives an opportunity for independent work, and even for some preliminary training in research. It has been found that this part of the work makes a great appeal to the more original student, as some of the theses presented reach a high standard. Many of the less gifted students also develop a strong interest in the subject chosen, and often do unexpectedly well. Examples of subjects which have been chosen for such theses are : The Sea in Literature ; The Supernatural in Poetry ; The Social Conditions of the late nineteenth century as reflected in the Contemporary Novel ; The Old Kent Road in Literature; The Sea Ballads of Masefield; Hardy's Women.

A keen delight in literature is shown by many training college students. A considerable proportion of them take the Advanced Course and enter on the reading of authors previously unknown to them with something of the discoverer's wonder and joy. English literature becomes a possession and a delight to them, and they show in their teaching the desire to pass on to others something of their own love of what is great in thought and beautiful in form. The enthusiasm of most students for English literature steadily grows throughout their college course ; they come to realize for themselves the living power of great literature as the perfect expression of thought and passion, and those who have themselves, in however small a measure, something of the creative power, are inspired to try their hand at writing verse, drama, or prose, and, by practising it, to arrive at a fuller appreciation of the act they have learned to love.

SOME NOTES ON "METHOD" WORK IN TRAINING COLLEGES.

The Courses in "Method" obviously cannot be undertaken apart from the so-called academic courses on the one hand and the general courses in education on the other. The Course in English method aims at showing the student what material and processes are suitable for children at various stages, and by what means such material can be presented so as to fulfil the general requirements of class-teaching. A student in the Advanced Course is prepared more fully to take charge of and organize (after some experience) the subject throughout a school.

Constant co-operation is found necessary between the English and education staffs, and, since English is the basis of all teaching, discussions with lecturers in all other subjects concerning the English involved in each subject are useful.

The "Method" courses are summarized in theories based as far as possible on the practical work of the students and staff. This practical work includes the collection and critical examination of syllabuses used in different types of schools, preparation of lesson notes, observation and giving of "demonstration" lessons (most valuable when given as courses instead of as individual instances), the work in school during school practice, the making of anthologies of story sources and poems for use in schools (tested often in the students' school practice), practice in story-telling and description to children and groups of students, reading aloud, and preparing plays for school representation, or representation to school children.

In addition many colleges conduct some experimental work in such questions as the speed of reading, the efficacy of different methods of teaching to read, of learning to spell, of learning by heart, etc. The results of individual work of this kind may be embodied in a thesis for presentation as part of the Final examination.

The question of *method* of teaching in school is never completely out of the lecturer's mind. However "academic" a syllabus may seem, it is nearly always interpreted with a professional bias. Thus, if a selection of Shakespeare's plays appears on the syllabus, whether method is mentioned or not, there is scarcely a training college lecturer who would not in the course of his teaching discuss the place of Shakespeare in school and the methods by which children might be led to appreciate him.

On this practical work lecture courses and discussions are based. The object of these is to show the student the place and

purpose of the subject, and its scope. He then studies how the different aspects of the subject (e.g., speech, reading, composition, grammar, literature, dictation, spelling, etc.) may be best presented under different conditions.

Most lecturers seem to agree that the purpose they seek to accomplish is to open the student's mind to the many *various* ways of tackling the difficulties presented. In no subject is it more necessary for every teacher to develop along his own lines in a manner to suit the circumstances ; but only by coming into contact with a wide variety of methods will the student be likely to find some suitable to himself and his class. Nothing in the nature of dogmatism is encouraged.

Frequently the students read papers or engage in debates and thus bring out forcibly what is to be "said on both sides " of debatable points, e.g., the teaching of grammar and spelling. It is generally found that such debates are empty unless they come towards the end of the second year of the student's course. The work in the first year tends to be of a simpler and more definite kind, illustrative of common methods of dealing with inevitable material and difficulties.

All this work is naturally supported by the study of text-books on method. The chief work here is to enable the student to take what good such books offer, without becoming the victim of " fads " or " stunts."

The development of a critical attitude is especially important in regard to his choice of text-books for children's reading. Many colleges make a point of collecting school-books, or enabling publishers to hold exhibitions on their premises, or giving the students opportunities of examining the books of circulating schools libraries, so that before he leaves college the student may have some reliable criterion of judgment concerning school books and may not be the gull of publishers' hacks, nor choose a reader merely because of its author's name or of its pictures.

* * *

Students come to a training college so that they may become teachers. It will be seen from the accompanying short sketch that in our opinion a student can only become a good teacher of English by first becoming a good student of English, and that this involves not only knowledge of the matter of English literature and the art of expression, but a conviction that literature is the revelation of life and that its study must result in a deeper delight in living.

In order to bring this about both tutors and students are given the utmost freedom, so that the work may never degenerate into the mechanical acquisition of unrelated and dead pieces of information. The aim of the courses is to put before the students the life that literature reveals, to train them to look at it fearlessly, thoughtfully, critically, so that they may understand it. In this pursuit they begin to appreciate the beauty of good writing, recognizing that only through good writing can truth emerge. It would be folly to assume that our achievements keep pace with our desires. We do feel, however, that many of our students leave college full of eagerness to continue their studies, possessing a clear idea of how to continue, and blessed with that fine humility which marks all true lovers of English.

Haldane and Brougham—A Parallel.

By F. A. Cavenagh.

The publication of Lord Haldane's Autobiography* suggests an interesting parallel between him and his predecessor on the Woolsack, Lord Brougham. Both half-Scottish, they were educated at Edinburgh University, though Haldane had the additional training of Göttingen—where he gained that passion for philosophy and for Germany which was so greatly to affect his character and his career. Brougham's main academic interest lay in mathematics and physical science, in which (like Haldane) he became a distinguished amateur. Passing to the English Bar, both entered the House of Commons on the Whig or Liberal side; and in each sphere they both moved steadily towards eminence. Although each as Lord Chancellor achieved judicial reforms, yet (so far as a layman can judge) Haldane was the sounder lawyer.† But while Brougham was the greatest orator of his day, Haldane had no powers of rhetoric: "I was gifted with but a poor voice," he writes. Contrast Western's remark about a speech of Brougham's: "Where the devil a fellow could get such lungs and such a flow of jaw upon such an occasion as this surpasses my imagination."‡ And there are many instances of the overwhelming effects of his speeches. Such effects were produced only once by Haldane, when in the debate on the University of London Bill he "sprang to his feet when an opportunity at last offered, and spoke for once like one inspired,"§ after which occasion both Joseph Chamberlain and Asquith told him that they had never before seen the House completely turned round by a single speech.

In temperament, however, no two men could have been more opposed. It is true that they were alike in a lifelong devotion to powerful and highly-gifted mothers,‖ and in stupendous capacity for work coupled with extraordinary versatility. But while Haldane was equable, unemotional, "philosophic," and, above all things, discreet, Brougham's eccentricity and virulent temper constantly

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*"Richard Burdon Haldane: an Autobiography." (Hodder and Stoughton, 1929.)

†It is interesting to note that Brougham was concerned in the establishment, and Haldane in the reform, of the Judicial Committee of the Privy Council.

‡Creevey I. 249.

§"Autobiography," p. 126.

‖*Ibid*, p. 162. "I wrote to her every day, from 1877 down to the day of her death." Brougham ("Memoirs," III, 89) says that his mother was the only person who saw that he was taking a false step by accepting the Great Seal. Thus she wrote: "If, as is probable, office is offered you in the new Government, pause before you accept it; do not be tempted to leave the House of Commons. As member for Yorkshire, backed by all you have done for the country, you are more powerful than any official that ever existed, however high in station or in rank. Throw not away the great position you have raised yourself to—a position greater than any that could be bestowed by King or Minister."

made him absurd, and, indeed, bordered on insanity. "A mischievous excitability," to quite Bagehot's famous remark,* is the most obvious expression" of Brougham's face. "If he were a horse nobody would buy him; with that eye, no one could answer for his temper." Hence Haldane had many warm friendships, Brougham few: even an intimate like Creevey calls him "Beelzebub" and "Old Wickedshifts." Neither was a staunch party man; but their motives were different. Brougham was out for his own advancement, Haldane joined forces with those who would promote the causes to which he was devoted. Thus Brougham's anti-slavery activities, and (at least in the earlier days) his interest in education, were means of grinding his own axe; but when Haldane collaborated with Balfour in reforming the London and Irish Universities, and again when, in opposition to his own party, he supported the Education Bill of 1902, it was because of his conviction that national education must be developed. Brougham lacked permanent and dominating principles; whereas Haldane's contemplative nature and philosophical training led him "to the belief in the possibility of finding rational principles underlying all forms of experience, and to a strong sense of the endeavour to find such principles as a first duty in every department of public life."† And to those who object that such theorizing stultifies a man of affairs the Expeditionary Force is sufficient answer.

How then comes it that Brougham should have been, at any rate for the years culminating in his election for Yorkshire, the most popular man in the country, whereas Haldane, never a popular figure, was at one time execrated? The reasons are fictitious and accidental. Our generation, fortunately, provides no opportunity for the advocacy of a Queen Caroline; whilst Haldane's war policy has been abundantly vindicated. Far more significant than the passions of the mob are the actual histories of the men. Brougham, after he lost office in 1834, never regained it in the subsequent thirty-four years of his life, in spite of all his overtures to his own and to the opposite party. Haldane was not only given the Order of Merit at the darkest moment of his career, but became Lord Chancellor in another ministry, and to the end led the Labour Party in the House of Lords.

Of their dealings with education it may be said generally that Haldane was the more constructive. Brougham's first connection with education was his chairmanship of the Select Committee "to

*"Biographical Studies," p. 69.
†"Autobiography," p. 352.

inquire into the education of the lower orders in the Metropolis" (1816), in which he so notoriously departed from the terms of reference. His tactless inquiries and his objectionable manner raised such a storm that he was not included in the Royal Commission on educational charities (1818-37). But although "blundering Brougham" roused such ill-feeling, and though his findings were often upset, yet he did an immense service in opening up the hidden places of endowments, the need being proved by the history of later Charity Commissions. Neither of his Education Bills (1820 and 1837) was successful; but the speeches with which he introduced them contain much that is still worth reading. Haldane was less interested in school than in university education; yet it is worth noting that he outlined in a speech (at Manchester, 10th January, 1913) "a colossal scheme of national education," which included the outstanding innovations of the Act of 1918. He considered, at any rate after 1902, that elementary and secondary education were in a fairly healthy state: the provision of further universities was the pressing need. Judging by the example of Germany, he writes, "I had come to see that what we needed badly in our own country was more universities, and universities of the civic type, in different parts of these islands."* This concern led him, from about 1893, into an alliance with Balfour, "because the Liberals were not up to the mark about questions of higher education."† With the backing of Balfour's Government he succeeded in passing the London University Act of 1898, which instituted reforms that Haldane himself regarded merely as temporary expedients. Again, under Balfour's ægis, he negotiated (during an amusingly secret mission) a settlement of the Catholic University of Ireland; a settlement which, though defeated at the time in the Cabinet, was adopted with slight modifications ten years later.

Haldane was, indeed, to some extent, responsible for the existence of the modern provincial universities. After Chamberlain's success in obtaining a Charter for Birmingham (1900), Liverpool decided to break away from the Victoria University, with its cumbrous federal machinery and the prominence which it gave to examinations. The matter came before a Special Committee of the Privy Council in December, 1902. The petition of Liverpool, half-heartedly supported by Manchester, was strongly opposed by the Yorkshire College at Leeds. Haldane offered to appear, gratis, as counsel for Liverpool; but, unexpectedly becoming a Privy

*Ibid., p. 90.
†Ibid., p. 124.

Councillor, gave his valuable assistance as a witness. The result was an Order in Council, dated 10th February, 1903, granting Liverpool its Charter. "The date," said Haldane (in his inaugural address as Chancellor of the University of Bristol),* "is, I think, a memorable one. It gave State recognition to a new policy. . . . The principle was accepted that the number of English universities was to be increased, and that their headquarters were to be in cities." Haldane further exercised his guidance on universities as Chairman of the Commissions on London and Wales ; the latter university was reorganized largely along the lines of his report. It would have done wisely to follow his advice and appoint a permanent Vice-Chancellor. In particular, one may mention his chairmanship of the Departmental Committee on the Imperial College of Science and Technology, which he desired to see part of a reconstructed University of London. "I was convinced that it is only in the larger atmosphere of a university that technical education of the finest kind can be attained." It is noteworthy that, under the 1929 Statutes, the Imperial College has seven years to decide whether it will remain within the university.

If Haldane was concerned with the latest developments of London University, Brougham had a great share in its inception. The idea of a university in London was first suggested, as everybody knows, by Thomas Campbell. His model was Bonn ; so that Haldane was not the first to seek light from Germany. But the driving power was Brougham's. As a malicious contemporary put it, the University "rose like an exhalation at his bidding."† "You have been the creator of this establishment," wrote Earl Grey in a letter to Brougham,‡ "and your name will be for ever united with the improvements which may spring not only from this but from the rival college, which never would have existed but for the success of your exertions." A prophecy singularly unfulfilled.

Even more striking is the parallel between the work done by the two men for adult education. Brougham was an original subscriber to the London Mechanics' Institute, of which Dr. Birkbeck was President—hence Cobbett's constant gibes at the Scotch "feelosophers." He maintained an active interest in this institute for at least twenty years, and he addressed similar institutes at Liverpool and Manchester in 1835. The subjects that they taught —e.g., geometry, hydrostatics, electricity, optics, application of

*Reprinted in "The Conduct of Life."
†"Fraser's Magazine."
‡Dated 7th October, 1828. ("Memoirs," II, 500.)

chemistry to the arts—were entirely to his mind, as were the principles that underlay them. The objects of the Manchester Institute are typical: "This Society has been formed for the purpose of enabling mechanics and artisans, of whatever trade they may be, to become acquainted with such branches of science as are of practical application in the exercise of that trade, that they may possess a more thorough knowledge of their business, acquire a greater degree of skill in the practice of it, and be qualified to make improvements and even new inventions in the arts which they respectively profess." Brougham's vision was restricted to such material and utilitarian ends. While for Haldane adult education was humanistic, not technical, cultural, not vocational, widening, ennobling, and, in one word, "spiritual," it is certain that Brougham never used that word—except, perhaps, when, as an old man, he dabbled with Robert Owen in spiritualism. The same limitations characterize the Society for the Diffusion of Useful Knowledge—Peacock's "Steam Intellect Society"—which Brougham founded in 1827. Its object was "strictly limited to what its title imports, namely, the imparting of useful knowledge to all classes of the community, particularly to such as are unable to avail themselves of experienced teachers, or may prefer learning by themselves." Though the Society in its twenty years of existence did most valuable work in publishing its sixpenny treatises, the "Penny Cyclopædia," the "Penny Magazine," etc., yet it was keenly criticized for failing to fulfil the promise to issue ethical and political treatises. These, as Harriet Martineau remarks, "never appeared, and the classes addressed by this Society found experimentally that their own Harry Brougham, as well as other Liberal leaders, had not faith enough in them to entrust them with political knowledge, but preferred putting out, in the most critical period of the nation's history, treatises on physical science, as a tub to the whale."* It is only fair to add that Brougham sought to rectify this shortcoming,† but his two volumes on "Political Philosophy" (1843) met with no success.

This narrow outlook was the chief cause of the failure of the early nineteenth century movement for adult education. The

*"Biographical Sketches," p. 159.

†Minutes of the Society, 8th November, 1837: "The Chairman gave notice that at their next meeting he should call the attention of the Committee to the fact that the publications of the Society have been hitherto almost entirely confined to mathematical and physical science, to the exclusion of intellectual, ethical, and political subjects; and that he shall recommend the Committee immediately to proceed with the preparation of treatises of the latter description."

difference in Haldane's attitude is summed up in the purpose with which he formed the British Institute of Adult Education in 1920. "Our common principle was one of faith in the effect of higher education on democracy. We did not, indeed, think that such education was everything. There were other phases of mental activity, such as religion and the love of the beautiful, which were not less important. But we thought that people whose minds were freed from the fetters of ignorance would develop these other phases more readily. We also thought that the student would feel that he had been assisted towards equality with his fellow-citizens, not absolute equality—for nature and circumstances would preclude that—but in the sense of having something more like even chances with his fellow-creatures. The universities were under existing circumstances too frequently preserves for the sons and daughters of the rich. Our plans, if they could be carried into effect, would at least diminish for a large number the exclusion from the chance of self-development."* Such a conception Brougham, with all his fervour for popular education, never attained. In his eyes mere information, "useful knowledge," was enough; but Haldane had a better grasp of psychology. Speaking of the advantages of "a wider range of knowledge, fuller cultivation of the intelligence, the discipline and development of the whole mind," he adds, "but this is only possible if you succeed in touching the imagination, and awakening the enthusiasm."† It could not be expected that Brougham, the disciple of Bentham and James Mill, would realize the importance of the emotional side; but if the modern movement for adult education is to succeed it must not fall back into the blind alley of technical instruction; it must follow the principles enunciated by Lord Haldane.

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*"Autobiography," p. 295. Cf. his Presidential Address at the British Institute Conference at Trinity College, Cambridge, September, 1926. (Report published by the Institute under the title "Adult Education in the Life of the Nation.")

†In the Liverpool University case. Quoted in Sir Frank Heath's admirable article in "Viscount Haldane of Cloan: the Man and his Work." (Oxford University Press.)

Modern Language Learning.

A Concise Sketch of Principles and of a Programme for the Introductory Stage: by J. J. Findlay. With a Foreword by W. W. Vaughan. (The Gregg Publishing Co. Pp. 130. 5s.)

APART from its advocacy of the use of a particular shorthand system, modified and extended to discharge the function and take the place of an international phonetic code, and its recommendation to teach Esperanto for a year before introducing a second language, the main burden of this book is to be found in the support it gives to what I conceive to be a beneficial and growing tendency to devote the first three if not four years of the school course in a second language (when that is started as late as ten) to giving the learner regular and varied opportunities for speaking it, and mastering books written in it by means of reading aloud and silently, and for using the new language in explaining and discussing the contents of the books read. Written composition, except in simple forms such as letter-writing and keeping a diary and a calendar, is to be postponed. The book is based on a clear recognition of the importance of laying down a sound foundation of linguistic material through the use of oral work of all kinds, before any attempt is made to train the pupil in the arts of composition and translation.

It is, however, to be greatly deplored that Dr. Findlay, like Mr. H. E. Palmer, has in this book countenanced the practice of applying the term "Direct Method" to a plan of teaching a second language in which the child is for a long time given explanations in his mother-tongue of many of the new words he meets with. The term in question was very badly needed, and the attempt to use it to describe a method which is in its essential point directly opposed to that which was first denoted by it should be resisted.

But what led Dr. Findlay to the adoption of a hybrid form of the direct method? It is because he has decided to start and continue the work for a considerable time from a centre—a play-centre. He has, I think, rightly condemned the picture as centre and the reader as centre, and has also shown some of the misconceptions which cling to some forms of the "conversational" method. Whether he ought not to have taken warning and avoided the attempt to start from any one particular centre will probably be disputed.

He proposes to use, "for the youngster, nursery rhymes, snatches of song; for those a little older, humorous fables," and similar material. All these "are presented, right from the start, in dialogue form to be reproduced from the spoken [gramophone]

record and the printed [shorthand phonetic] text, somewhat as a scene from 'As You Like It ' is prepared in an English class . . . " " Thus the first lesson in French may include the song *Sur le pont d'Avignon.*" Some readers may perhaps like to have their recollection of this rhyme revived, and so I add it here :

Sur le pont d'Avignon,
L'on y danse tout en rond.
Les beaux messieurs font comme ça,
Et puis encor' comme ça. Etc.

It is obvious that this is a difficult piece of work to be taken as a starting-point. How is it to be explained to the pupils ? Some use will be made of pictures, objects, etc. " The only [oral] explanations given of its phraseology consist of a minimum of statements *such as the learner demands* [author's italics] in order to reproduce the words with understanding and feeling. Obviously these explanations are given in the vernacular, and we need have no qualms about being unfaithful to the Direct Method " (page 14). " What the boy gets out of this experience is a new term or synonym for the *ideas* underlying *on, bridge, the* : and the method of the teacher enables him to attach these ideas to *sur, pont, le,* without stressing the attachment to *on, bridge, the.* And this new attachment (of foreign sign to *idea*) is strengthened, made " direct," by repetition, by acting, by imaging the whole scene as an experience " (page 15). But the teacher should as quickly as possible " drop reference to the vernacular, allowing it to *fall below the threshold of consciousness* " (page 20).

But having decided to make the " play " the centre of his teaching, what led Dr. Findlay to introduce the vernacular into his treatment of it ? The answer is to be found and its justification too, so the author postulates, in the fact that it " aims from the first moment to engage the pupil in the enjoyment of thought and feeling in the foreign medium " (page 19). But he finds another kind of justification in the following too ingenious argument : " Since foreign words and native words are," he maintains, " in essence synonyms for ideas (which like all synonyms may at times recall each other), we cannot, if we would, prevent the association of synonyms. We are foolish if we try to suppress this tendency ; but we *control* it, by establishing at the outset the habit of direct association as an enjoyable and novel experience " (page 21). The author does not, it seems, anticipate any difficulty in getting the pupil to put that association aside when it has served its purpose (page 21). This is, however, the difficulty which has beset all plans into which

translation of any kind enters freely into the earlier stages. I must confess that Dr. Findlay seems to me to underestimate very considerably the fact that a child taught on such a plan will demand an increasing number of explanations in the vernacular. To call up a spirit is said to be easy for some : to lay it is generally difficult.

But as the pupil gains a greater command over more and more words and phrases, it is proposed that wherever possible explanations should be given in the new language. Furthermore, if the teacher follows the advice given here to keep a complete record of the vocabulary introduced, he will have less need to use translation, and be in a position to know what explanations in the foreign tongue can be understood. Also, for class purposes, a number of foreign words and phrases will be learnt at an early stage.

It is clear even from the brief summary given above of the central part of Dr. Findlay's plan that the ideal which has been cherished by supporters of the direct method, and attained by some of them, has been abandoned by him. They aim at conducting the lessons in the new tongue entirely and from the beginning in it, and without the aid of the vernacular. They realize, like him, that their principal task is to help the child to utter and understand sentences and phrases (and, through them, single words) in the new tongue. This material must become a part of the learner's mind, and gradually organize itself in his subconsciousness.

Here I must join issue with the writer. He has, I think, failed to realize the conditions under which the subconsciousness can most rapidly, fully, and effectively organize the linguistic material presented to it. The way in which even savage tribes have built up, without being aware of it, a complicated language for themselves is to every thinking person a source of wonder. But we very often forget that every language contains a number of over-elaborated, contradictory, and useless forms. The subconscious mind has only a limited power of classification. We must, therefore, in the first place demand that the teacher of a new language should make a careful analysis of it, select, and arrange the kind of sentences, questions, answers, etc., which he means to teach ; in other words, *he must help the work done in the subconscious* by organizing the material presented to it from week to week, and month to month. It is obvious from the fact that Professor Findlay starts off with a by no means easy jingle like " Sur le pont d'Avignon " that he does not place sufficient emphasis on this important consideration.

But the thinking mind is just as much impressed by the way in which a child learns the vernacular at home as by the manner in

which the savage has gradually developed a language. The child, as Dr. Rouse has pointed out, does not learn by the direct method : he learns without the aid of any method. Nevertheless, the experiences by means of which he acquires his first language contain the essentials on which the direct method is based, for his hearing and uttering and imitating of the sentences, etc., he gradually learns to employ, arise out of situations, most of them of a very simple character, in which linguistic experiences form a part of manual and other actions. The command, " Leave the dog alone ! " or the statement, " The kettle is boiling," is not spoken by the mother *in vacuo*, but with direct reference to a particular situation, and this gives meaning to it. All this is repeated over and over again, every day, for years. The sentence is constantly employed in connection with a meaningful situation, but no explanation of it is given in any other tongue. We must, therefore, in the second place, ask the teacher of a second language, who has, I now assume, already classified and arranged his linguistic material in due crder, to create situations in which he can use a particular command or statement, and for this purpose provide objects, models, pictures (especially at first of single things), black-board sketches, etc., and have recourse to actions, games, etc. Instead of pursuing a well-laid, interesting, and undoubtedly safe approach of this kind, Professor Findlay recommends what at first sight appears like a " Royal Road " ; in other words, he avoids a great deal of the trouble involved in the plan sketched above, by regular employment of vernacular explanations.

From what has been said, it will follow that we must make a third demand upon our teacher. He must make provision for the constant use, repetition and application, with or without the aid of the supporting " situations," of the linguistic material introduced : there will be no need for explanations in the mother-tongue. Unless I have failed to understand Dr. Findlay, he not only makes no provision even for the regular revision of such translations as are given to the pupils, but even deprecates our doing so. " What the teacher ought to do," he says, " is to give these necessary explanations and thereafter to drop reference to the vernacular, allowing it to fall below the threshold of consciousness." Oh that modern language teaching could be reduced to such simple terms ! But how is the work to be revised ? In the vernacular, or in the new tongue ? It cannot be done in the latter, for there has been no systematic organization of even the simple forms of language which are necessary for carrying on an interchange of work between teacher and pupil. Dr. Findlay does not ignore this point, but I shall leave the reader

to judge for himself the adequacy of his explanation. "Drill," he says, "in the form of conversation is undoubtedly required, but can best be practised by repeatedly going over the themes [the rhymes, plays, etc.], many of which should contain some dialogue."

In conclusion, I am forced to think that this attempt to make a new royal road to the acquirement of a second language is unsuccessful: the road contains many quagmires.

The price, 5s., is too high. The book only contains 130 small pages and one chart.

WILLIAM PHILLIPS.

Book Reviews.

A Sociological Philosophy of Education : by Ross L. Finney, Assistant Professor of Educational Sociology, University of Minnesota. (The Macmillan Company. Pp. xi+563. 10s. 6d. net.)

This is a long book, packed with vital discussions and good points, well made. The central theme of the book is that the spirit of the age, the *Zeitgeist*, is obsessed with an excessive individualism in which the importance of control and discipline has been seriously under-estimated. Taking his premises from social psychology the author stresses the tendency of human minds to learn from one another "through a sort of semi-passive mentation that results naturally from the social process." When viewed in the light of this tendency the individualist psychology at present in vogue, and the philosophy of life and society that is inferred from it, is one-sided and misleading. Educational statesmen are needed, versed in social psychology, who shall deliberately predetermine the learning process of to-day instead of allowing it to be inadvertently predetermined by the social process of yesterday. They are to be the architects of a "telic" society in which the values shall be what those of democracy would be if its philosophy were based on the findings of social science.

Much of the book, of course, has a specific American application, but the essential problems of education are similar in all countries, and every part of the book has important implications for the educationist on this side of the Atlantic. Perhaps the discussion which we should most urgently take up and continue in England is that relating to the problems of the curriculum, especially at the secondary and undergraduate stages. There is already a good deal of sympathy here with the author's view that far too much time is wasted on formal English, mathematical, foreign language, and Latin teaching. This results, in his opinion, from the fact that secondary education caters for a "rise-out-of-your-class" democracy. We need, he thinks, to recognize that all classes of occupation are inevitable and that the great majority are predestined never to rise at all. What is necessary, therefore, is the realization of Grundtvig's vision of educating the labouring classes, as such, out of their ignorance and unculture. The rising generation as a whole "needs a new philosophy of individual and social life; a new set of beliefs. And if this new philosophy is to equip them for *all* the relationships of modern life it must take its constituent facts from *all* the modern sciences that deal with human life : geography, biology, psychology, social psychology, anthropology, sociology, economics, political science, ethics, philosophy, and history." These, the new humanities, must supersede what is formal and redundant in the existing curriculum. The task, as all teachers who sympathize with the writer know, is not nearly so formidable as it seems when put thus baldly, and Dr. Finney will find a growing body of opinion on this side like-minded with himself.

There is also much to be said for the view that mass education can never do more than provide for intelligent followership and that, since the unique function of the academic college is to provide society with enlightened leadership, and since such leadership involves as extensive and broad a knowledge as possible of *all* the social institutions and intellectual resources of our collective life, the college should specialize its students in *nothing*, but instead should generalize their knowledge as comprehensively as possible.

When, however, one thinks of the spirit that is to infuse Dr. Finney's "telic" society little doubts begin to creep in. If one had suffered from the precocious American child of fiction one would perhaps be less suspicious of

his attitude towards discipline. But if "individualism" in education has gone too far in America, it certainly has not gone far enough here, and in any case it is a little disquieting to find an educational writer reacting in the direction of coercion, even to the extent of corporal punishment. One feels that the author takes for granted the inevitable continuance of many factors in contemporary society which need by no means survive, notably the family, and, in the present connection, fear. This is no place, however, to enter into a discussion on the nature and incidence of fear, and it must suffice to say that while it is difficult to conceive of a time when awareness of danger need not be, yet any educational philosophy which views the motivation of fear without condemnation cannot have the support of any man or woman who has witnessed and really comprehended the dire nature of its effects.

Partly because of the way in which it is coloured by the attitude of the author just mentioned and partly because of the danger inherent in authority of blunting the susceptibilities of even the finest minds and characters, one rather mistrusts, also, the new intellectual hierarchy which is to direct and control society. The history of academic institutions does not beget confidence that really democratic discussion will flourish under the intellectual more than any other ruler unless the mechanism of society is itself democratic, and discussion will never be substituted for conflict, as the author hopes, unless every one whose interests are touched by the discussion is free to take part in it unreservedly and on equal terms. Unless man is to wait "until the competent few become omniscient and perfectly unselfish" before he can be sure that martyrdom will not occasionally be necessary to "vindicate a worthy innovation" he must seek an alternative to Dr. Finney's society.

B.C.L.J.

Educational Psychology: An Objective Study: by Peter Sandiford, Professor of Educational Psychology in the University of Toronto. (Longmans, Green and Co., Ltd. Pp. xvii+406. 10s. 6d.)

Professor Sandiford has written a book for which everyone interested in education should be very grateful to him, though many may not be in agreement with his attitude in rejecting as unscientific *all* data of introspection.

The author, as the sub-title indicates, adopts the objective viewpoint in psychology. "Modern psychology is dominated by the scientific attitude and aim." "Science demands objectivity and experimentation. Modern psychology, in contrast with ancient, is therefore objective rather than subjective; experimental rather than speculative. Its extreme form, usually called behaviourism, is a purely objective, experimental branch of natural science, more closely related to physiology than to any other of the sciences. Its subject-matter is the behaviour or activities of human beings. With consciousness as subject-matter it will have nothing to do, claiming that consciousness is neither a definable nor a usable concept so far as science is concerned" (pages 2 and 3). And yet psychology is not identical with physiology, for "whereas physiology studies the actions of parts of the body . . . psychology studies the reactions of the body as a whole" (page 3). Professor Sandiford claims that psychology gains far more than it loses by this limitation of the field of study, the gains of observational and experimental data outweighing the losses of introspectionist data.

After an introductory chapter, the book is arranged in two parts, "Man's Equipment for Learning," and "The Learning Process." Part I has exceedingly valuable chapters on "The Inheritance of Human Traits," "The Behaviour of Organisms," and "How the Human Body Works" (three chapters). In Chapter 6, "Non-variable Behaviour; Reflexes and Instincts," and Chapter 7, "Non-variable Behaviour: Emotions," Professor Sandiford's viewpoint leads him to interpretations that may not be accepted by everyone.

McDougall's theory of instinct is sharply criticized (page 138). Chapter 8 deals with "Intelligence and its Measurement," and gives a useful short summary of Spearman's and Thorndike's views as to the nature of intelligence, and also a discussion of mental tests.

Part II is occupied with learning (in terms of conditioned stimuli and conditioned reactions), with improvement in learning and its permanence, fatigue, the transfer of training, the measurement of improvement, and improvement in special subjects. As one would expect, learning is treated as habit-formation, thinking being the formation of language habits, and memory a matter of habit-memory. Throughout, a very large number of experiments are described or referred to, and at the end of each chapter is an extensive bibliography.

The book seems to us to be a valuable addition to educational psychology, since it brings within reasonable compass the results of so much of the latest experimental work. Excellent also is the account of the physiological basis of behaviour. Those who think that the behaviourist psychology is unable to give a complete account of mental life will need to supplement this book with others written from a different point of view. E.S.

Methods with Adolescents by Ralph W. Pringle. (D. C. Heath and Co. 1927. Pp. xvii+437. 7s. 6d.)

The author of "Methods with Adolescents" is to be congratulated on his success in writing what is really a book on Educational Psychology. So many writers in this field leave their psychological facts and theories "in the air," or at best only utilize them for deducing general educational principles, but Mr. Pringle has made a valiant attempt to bring his knowledge of the characteristics of adolescence to bear on problems of method in high school education. His constant reinforcement of the need for adopting psychological, as contrasted with logical methods, and his steady application of the facts of adolescent development to problems of *special* method are the most valuable features of this book. He has chapters not only on general classroom procedure, but also on mathematics, algebra, geometry, science, biological sciences, history, civics, economics and sociology, English composition, literature, foreign languages, Latin and modern languages. The sections dealing with the teaching of science, mathematics, and history seem to be especially helpful and illuminating, though the author's insight may very well have come from practical teaching experience rather than psychological analyses.

Judged from the standpoint of scientific method, this book is open to somewhat serious criticism. The generalizations concerning adolescence in chapter two, on which the subsequent educational chapters are supposed to be based, do not seem to have been arrived at inductively from the consideration of concrete cases. They are merely asserted dogmatically. Variations in development and the rich individualities of adolescents are ignored, and there is, consequently, a false simplification of the relevant psychological facts. The result is a certain "woodenness" of method and a failure to realize the importance of "individual" methods in education.

In the choice of subjects to which to apply the psychological facts Mr. Pringle has been unduly influenced either by high school tradition or by an over-intellectualist view of education. Although he states explicitly that, "for the high-school pupil, that knowledge is of most worth which stands in closest relation to the natural emotional and mental activities of adolescent boys and girls" (page 73), yet there are no sections dealing with games and physical education, art, music, and the crafts, nor with religious education. But surely these stand in closer relation to the emotional and mental activities of the majority of adolescent boys and girls than Latin and foreign languages,

and their omission suggests that the psychological facts of adolescence have not been sufficiently operative in the mind of the author in the selection of topics for detailed treatment. The omission of any discussion of the vexed problem of sex-teaching in the chapter on the biological sciences and the failure to emphasize the importance of dramatic methods in the teaching of English and other languages are probably also due to the fact that for some reason or other the psychological ideas of the author are relatively inert and consequently are ineffective in moulding his educational theory. O.A.W.

Common Principles in Psychology and Physiology : by J. T. MacCurdy M.D., M.A. (Cambridge Psychological Library : University Press. Pp. 284. 15s. net.)

The aim of this book, as suggested by the title, is " to bridge the gap between body and mind, between structure and function." The book is divided into two sections, the first dealing with " psychological patterns," the second with " physiological patterns." That fundamental laws can be common to both aspects of life is held to be due to the fact that bodily processes follow functional and not merely physico-chemical laws.

The book is undoubtedly an important contribution to psychology. It is a pleasure to recognize the thoroughness of the psychological work of one who was primarily a medical man. The advances of modern physiology and psychology make this kind of liaison work specially difficult, but of peculiar value.

To the advanced student of psychology the book will probably be of most value for its critical and selective account of those sections of modern physiology which bear most closely on psychological problems. But this must not be taken to imply that the specifically psychological part of the volume does not contain much that is suggestive, in its discussion, for example, of " images " and " patterns " and their functioning in such processes as attention, recognition, and in the appearance of " meaning."

Education : Principles and Practices : by E. D. Grizzell, Ph.D. (Macmillan Co., New York. Pp. xvi and 428. 10s.)

This work strikes a different note from that which has been sounded in most text-books in recent years ; while the psychological aspects of education are in clear view throughout, they are brought into relation with the social demands of advancing civilization ; education is regarded as a function of social institutions. The chapters which deal with the curriculum are fresh and suggestive to those who are apt to fall into a rut on the matter of school subjects ; history is freely drawn upon, so that in reading the book one soon forms a concept of Education as a dynamic agent rather than as a means of static control ; " Society is ever growing more complex, and its demands upon the individual multiply from generation to generation. . . . The changing need of the child demands a constantly changing curriculum." While the volume has been written primarily for American students, there is relatively little that is of interest to citizens of the States alone ; it deserves a reading by a wide public ; the expressed opinions are well balanced, their author has kept facts of history in mind and has made use of much of the material which modern research in psychology and administrative statistics provide. Very many references are given for special reading.

The book is well " got-up " ; the print is particularly clear and such diagrams as are supplied serve their purpose well. A.P.B.

Historical Introduction to Modern Psychology : by Gardner Murphy. (London, Kegan Paul. Pp. 470+xvii. 21s. net.)

Dr. Murphy, of Columbia University, has given us a valuable and erudite Historical Introduction to Modern Psychology. Many students have found the need for such a volume, and the publishers of the "International Library of Psychology" once more have supplied the desired book.

The author devotes the introductory section to a résumé of the work of the pre-experimental period, and with sure strokes paints in a suitable background of psychology in the seventeenth, eighteenth, and early nineteenth centuries. The next section, under the general heading of " From Weber's Experiments to the Age of Wundt," deals with early experimental work, the mid-nineteenth century contributions of the British psychologists, the influence of the doctrine of evolution, the psychiatric studies of Itard, Sequin, Braid, Charcot, the early German physiological psychology, and the extremely valuable work of Wundt.

The third section is concerned with contemporary psychology. Here the author's powers of selection, arrangement, and concise expression have been tried to their utmost, but he has succeeded extremely well, although some prominent names are missing, and all would not agree with some of his conclusions and criticisms.

A supplement, contributed by Heinrich Klüver, deals with contemporary German psychology.

The book merits a much longer review, but it will rapidly prove its worth and will find a place in the reference library of all students interested in the origins and development of modern psychology. E.C.C.

Dialectic : by Mortimer J. Adler, Lecturer in Psychology, Columbia University. (The International Library of Psychology, Philosophy, and Scientific Method. Pp. 265. 10s. 6d.)

In an introductory chapter, Mr. Adler enquires into the methodology of thought, and as a result of an examination of traditional doctrines, in which dissenting points of view, together with a " certain intellectual congeniality," come to light, a different methodology is suggested, namely dialectic. Dialectic, we are told, is thinking in discourse, and arises through the opposition of meanings in discourse. Since it is confined entirely to the realm of discourse, it cannot consider meanings and entities outside of discourse (the intrusion of facts would bring it to an end), and it therefore cannot establish truths which depend on the relation between discourse and items not in discourse. It is a method of understanding and of criticism, and " is significantly different from the procedure of the empirical scientist or the method of the mathematician." Philosophy, Mr. Adler believes, is nothing more or less than dialectic : it is a method and an intellectual attitude, not a special subject matter nor a system.

These ideas are worked out in the course of a long and very careful analysis. The book should be read in connection with Mr. Scott Buchanan's " Possibility," also in the " International Library." E.S.

The Religious Development of Adolescents based upon their Literary Productions : by Oskar Kupky, Ph.D. (Leipzig). Authorized translation with a preface by William Clark Tow. (New York, The Macmillan Company, 1928. Pp. vii+138. 6s. 6d.)

The author, aware of the inadequacy, if taken uncritically, of the questionnaire and statistical methods, bases his suggestions concerning the probable course of religious development in adolescents of both sexes on their private diaries, prayers, and poems, extracts from which are given both in the text and in the appendix.

He recognizes that insufficiency in the range of his data precludes generalizations, but his investigations lead to interesting opinions.

According to these, religion (as defined in the introductory chapter of the monograph) arises in the first instance at puberty, and is not "completely developed" till the end of this period : it takes a varied course according to the temperament and social and religious influences to which the youth is subjected.

The author's investigations lead him to doubt the truth of the " three periods of (religious) development " held by Bohne and Starbuck, and to deny that youth's religion is exclusively determined by physical (including sexual) or by mental (including intellectual and æsthetic) factors.

A valuable bibliography of writings is given relating to general psychology, the psychology of childhood and adolescents, and to biographical novels.

M.H.

Self Improvement : A Study of Criticism for Teachers : by Sheldon Emmor Davis, Ph.D. (New York, The Macmillan Co., 1926. Pp. 267. 6s. 6d.)

The book is worth reading for the excellent reason that it is full of common sense suggestions. As in many American books on education, its style resembles more nearly a business catalogue with percentage values well marked than a work relating to the education of a human spirit.

Its aim, as indicated by the title, is to help the teacher towards self criticism and self-improvement. Towards this end the teacher is given (as one out of many aids) an exhaustive list of questions dealing with his prowess in every department of school work and life, and is encouraged to take " an objective attitude, studying himself as if he were considering some other person."

Self-examination may be of use, provided it is private, and does not lead to the lack of humour and to the self-consciousness which go to the making of a prig. The author gives the teacher real help towards improvement by the topics he suggests for his consideration—examples of these may be indicated from headings in the excellent table of contents, some of which are as follows : " The Fear of Silence in the Class-room," " Fewer Questions and Better," "The Rate of Instruction," "Written Work and Repetition Work in School," " Criticisms of Text-book Teaching."

M.H.

Educational Theories : by Sir John Adams. (Ernest Benn, Ltd. Pp. 77. 6d.)

In this little book Professor Adams discusses educational theory, the classification of educational theorists, standards in education, and theories of method. Though the treatment is brief, it is solid and philosophical. Indeed, it is more suitable as an introductory study for the philosophical reader, or as a rapid general survey for one who has already gone some way in the study of education, than as an introduction for beginners.

The Nature of Conduct : by P. M. Symonds. (The Macmillan Company. Pp. 346. 8s. net.)

Teachers, parents, and social workers will find in this book an account of the results of much modern research into the physiological conditions of conduct and of attempts to describe conduct in terms of stimulus-response together with a summary analysis of some forces governing conduct. Many will disagree with the author when he says (page 207) " purpose may be disregarded in conduct control and guidance," and " the building of purpose is identical with the building of habits and skills," but all who read the book will find it thought provoking and helpful in the understanding of character formation.

A B C of Adler's Psychology : by Philippe Mairet. (Kegan Paul. Pp. 116. 3s. 6d.)
A useful introduction to the often obscure writings of Adler. The treatment is on broad general lines, and the book is well written.

Cornell Studies in English, XII. Milton on Education : edited by O. M. Ainsworth. (Yale University Press. London : Humphrey Milford, Oxford University Press. Pp. 370. 12s. 6d. net.)
This volume consists of the " Tractate of Education " (14 pages) with supplementary extracts from other writings of Milton (258 pages). It is most convenient to have thus collected everything that Milton wrote bearing directly or indirectly on education ; for the meaning of the " Tractate " is often clarified by these extracts. One example may be given. "And though a linguist should pride himself to have all the tongues that Babel cleft the world into, yet, if he have not studied the solid things in them as well as the words and lexicons, he were nothing so much to be esteemed a learned man as any yeoman or tradesman competently wise in his mother-dialect only." What he means by the " solid things " is made plain by a passage in the " Defence of the People of England " : " Other copies, and various readings, and words omitted, and corruptions of texts, and the like—these you are full of ; but no footsteps of any solid learning appears in all you have writ. Or do you think yourself a wise man, that quarrel and contend about the meanest trifles that may be ? that, being altogether ignorant in astronomy and physic, yet are always railing at the professors of both, whom all men credit in what things belong to their own sciences ? "

Professor Ainsworth supplies a useful introduction, and notes to the " Tractate." It seems, however, unfortunate that in an edition which can hardly be intended for popular reading he should have " normalized the punctuation, and in general made the orthography conform to present usage." The bibliography is valuable ; but it strangely omits Professor G. H. Turnbull's study of Samuel Hartlib. The book is excellently printed ; but a cloth cover would be more serviceable. F.A.C.

The Small Junior High School : by F. T. Spaulding. (Harvard : University Press. Pp. 226. 10s. 6d. net.)
Our High School Clubs : by Members of the English Five Class, Oak Park High School, Illinois. (Macmillan Co. Pp. 253. 5s. net.)
These two books, dealing with recent developments in American post primary education, should interest those in this country who are concerned with reorganization and with the problem of the modern school, particularly in rural areas. The first book studies intensively nineteen small schools in villages and small towns in Massachusetts, where in order to make " fundamentally better provision for the needs of early adolescence than that afforded by the traditional eight-four organization," a Junior High School course of three or four grades has been superimposed upon a primary course of six grades. The economy and efficiency of these small schools are compared by elaborate mathematical and statistical methods with those of larger schools of similar type in urban areas, and suggestions are made for levelling up the former to the standard of the latter.

Of interest to the English reader is the discussion of the objectives of the Junior High School, and of the methods by which these may be attained. Much importance is attached to " extra curricular activities," and our second book contains a detailed study of such activities in a large mixed high school. Written co-operatively by the members of a senior class, the book is in itself an example of the " problem-project method." The work of about thirty societies (including a " Friendship Committee " and a

" Cheer-up Committee ") is described. There is a teacher-sponsor in charge of each club, and a " Committee on Clubs " in authority over all ; and one reads with interest that the members of each club are appointed by the staff because " the State Anti-Fraternity law forbids student election of their own members." The writers discuss with astonishing sophistication the importance of the clubs for their own moral and personal development.

M.P.

The New Physical Education : by T. D. Wood, A.M., M.D., and R. F. Cassidy, A.M. (Macmillan.)

This book is interesting, and to some readers, no doubt, will seem revolutionary in the world of physical training. The reviewer knows little of the existing practices of gymnastics in America, but, if the authors are right in their condemnation of the present system, some reform seems needed.

In the authors' " Naturalized Program " for schools no formal gymnastics appear, two reasons for this being " That formal gymnastics have trained the body too much within itself and without sufficient regard for the attitudes of the mind and for the indirect effects of exercise upon disposition and personality "—and, secondly, that " It has developed various forms of ability which are not, in identity or analogy, closely enough related to the interests and activities of human life to justify the time and effort given them."

This " Program " consists of games and activities ; the curriculum to be followed is drawn up by the children and the teacher together. The play interest of the different ages is catered for, leading up to the big organized games, swimming, athetics, folk dancing, etc. The times to be allotted to this " Program " are as follows : four to five hours a day of big brain muscle activity for kindergarten ; three to four hours a day in elementary grades ; two to three hours a day in junior high school ; and one and a half hours to two in high schools and colleges. Would that such times could be obtained for physical education in this country ! One point made by the authors is that all activity should take place out of doors and that a gymnasium should only be used when conditions are impossible in the open. How many elementary schools in England can boast of even a well-ventilated hall—much less a gymnasium—for use on wet days ?

The omission of formal gymnastics would find many opponents here, not only among teachers but among the children, too. Gymnastic lessons, as such, are still enjoyed, and provided that feats of skill such as vaulting, agility exercises, and games are also included in the curriculum, an even balance of control of body, posture, discipline, response, together with healthful enjoyment can be maintained. There is surely no school left in England at any rate where the teachers give their children formal gymnastic exercises in four or six lines each and every lesson. Even for those who oppose the omission of formal gymnastics there is much in this book that can be found interesting and helpful in connection with games and athletics and general feats of skill and agility.

M.E.H.

Negro Schools in the Southern States : by Lance G. E. Jones, M.A., Ph.D. (Oxford University Press. Pp. 160. 10s.)

This is a very fair and thorough study of a great subject, and, in fact, the first satisfactory report since the recent stream of visitors to southern negro schools from all over the world, including increasing numbers from Africa, looking for help in their own work, and seeing the American negro through African eyes. The author, studying the subject impartially as he does, sees him in his own environment—for the educational problems in the two continents are very different, since the great masses of American negroes are thoroughly

Americanized and have little or no interest in the continent of their ancestors. Hence the main value to visitors from Africa is to see how the negro can develop when given a chance, as his immense progress since the abolition of slavery testifies.

The author points out that the increasing race separation in the South may result more and more in the negro colleges being staffed entirely by negroes, which is to be deplored, as a school should be a replica of the world, and the more students learn in school of race co-operation the more effective will their lives be afterwards.

In his criticism of Hampton he lays his finger on the present danger, which is that in its desire to develop into a good collegiate institution it may lose the pioneer spirit which has marked it in the past and which is needed to-day as much as ever, a spirit involving the taking of risks in the cause of its faith. The chapters dealing with rural schools and the Jeanes teachers and the Rosenwald Fund are most illuminating and interesting. F.R.I.

Individual Instruction in English Composition : by Stephen De Witt Stephens. (Published by the Harvard University Press and the Oxford University Press. Pp. 150. 10s. net.)

This is the eleventh volume of Harvard Studies in Education. The author gives a brief analysis of the problem of training pupils in composition and describes many experiments in method which led to the development of individual instruction. In Section III he gives the background of psychology and method leading to the view that "the pupil must be met on the level of his real needs and taught by the intrument of his own activity." Section IV contains critical accounts of various methods which have been used in the attempt to develop individual instruction. In Section V the author attempts to bring the various elements of individual method into a unity so that their significance can be estimated for future guidance.

The result of the author's thorough and scholarly examination of these methods may be given in his own words : " Individual instruction is, then, merely the present manifestation of the development of method, as method differentiates itself from its complement in the learning experience—the intended content. It is, just now, holding the centre of the stage. That the audience will not keep it there long seems certain . . . It will have its part to play, however, in the background."

Though work in English composition has been made the basis of discussion and example in this book, yet the analysis of the method is so penetrating that all students of method can profit from a careful reading of its contents.

A valuable bibliography of recent publications in individual instruction is given with references to earlier bibliographies. This bibliography is not exclusively American and contains references to many English publications. A.E.C.

Poetry in School : by J. Hubert Jagger, M.A., D.Litt. (Published by the University of London Press, Ltd. Pp. 244. 6s. net.)

In this book the author has wisely assumed that children are interested in poetic experience for the same reasons as adults, and are affected by the same elements in poetic form as appeal to adults.

His treatment of the subject falls into three parts—poetic experience, the deepening of appreciation, and educational aspects of poetry.

In the first part the poet's art is described, the experience of appreciation is analysed, and methods of conducting poetry lessons are examined. The second part contains a description of the principal features of poetic technique, the proper study of which can deepen appreciation in the future.

Teachers will find in the third part many valuable suggestions under the chapter headings—The Divine Fire : What Use Is it ? Poetic Imagination, Poetry, Music, Speech and Print, and The Choice of Poems.

The author has brought together the results of psychological analysis and the main principles of poetic theory in a way which should be helpful to reflective teachers of English poetry.

He criticizes the purely analytic study of poems, but at the same time shows how such study can deepen appreciation. In spite of his criticism on the analytic method he appears to the reviewer to have forgotten that many readers will estimate the importance of a topic by the amount of space devoted to it.

The book should be on the working shelves of every teacher of English poetry.

A.E.C.

The Learning of History in Elementary Schools : by Catherine B. Firth, M.A., D.Litt. (Kegan Paul, Trench, Trubner, and Co., Ltd. Pp. viii+215. 6s. net.)

History has been accepted for some considerable time now as a subject in our elementary school curricula. But surprisingly little has been written on possible or desirable methods of teaching history under the special conditions of these schools. Elementary school teachers throughout Great Britain owe a debt of gratitude to Dr. Firth for the candid vigour with which she has attacked the practical problems faced daily by these teachers, and for her comprehensive survey of methods which have been found to give good results.

Dr. Firth frankly accepts the fundamental importance of the child's reaction to our history lessons. This standpoint enables the author to show that childish interests and childish experience should have a far closer relationship than is usually admitted to our school history curricula, our methods of teaching, and even to the aims we set before ourselves as teachers of history. Dr. Firth's attitude has much common-sense and much sound psychology behind it. Traditional ideas are, as a general rule, accepted only on a close examination of their merits, although there are some points where tradition induces the author to abandon her new psychological faith. Her advice on the teaching of chronology is faulty, for instance, and some of her suggestions in regard to curricula invite criticism on account of their conventionality.

Dr. Firth's book should prove valuable in suggestion not only to class teachers of history, but also to school heads, who are reorganizing their senior departments on the lines of the Hadow Report.

J.G.MacG.

Mechanical Aptitudes : by John W. Cox, D.Sc. (Methuen and Co., Ltd. Pp. 209. 7s. 6d. net.)

The author gives an account of a research into the existence and nature of mechanical ability and into methods by which it may be measured. After examining previous work on cognate topics, and defining the problem, the author describes the tests used, examines their reliability, and their results, showing the existence of a " special ability," gives a subjective analysis of this ability, and discusses the psychological, educational, and industrial significance of the results obtained.

The book contains an excellent account of the research, the results of which cannot be ignored by psychologists and others concerned with the nature of individual differences. The author has shown the existence ot " m " (a mental factor) which operates in conjunction with " g," and suggests that in education provision should be made for the exercise of the mental processes underlying " m," which should also be measured when differentiation of the curriculum is made.

History and Historical Research : by C. G. Crump. (Routledge. Pp. x+178. 5s.)

The author, after a life-time at the Public Record Office, discusses in this book the way in which the mind of the tyro in historical research works. His aim is to discover the characteristic qualities which mark the habit of mind of the historical enquirer and incidentally, in so doing, to encourage the beginner by presenting him with a ready means of reassurance that he is not alone in his difficulties, doubts, and fears.

If he can be persuaded to read it, the book will be of value to the man who is merely seeking a post-graduate qualification in that it will undermine his complacency. But its real value is for the true enquirer, to whom, in the night watches, when he finds himself persistent yet afraid, it will be at once guide, philosopher, and friend. The recording angel, " the only example of an historian who is both impartial and objective," will certainly say that however much more the writer might have done " if his energies had been better or otherwise directed," in this work at least he has indeed done well.

The Group-Study Plan : by Edward R. Maguire. (Charles Scribner's Sons. Pp. 203+xv. 7s. 6d.)

The author of this book is the Principal of Junior High School, New York City, who presents a most interesting and instructive account of the Group-Study Plan, giving actual details of working as well as an account of the principles involved.

He urges upon the professional teacher the use of every device and aid towards the study of the individual pupil ; his abilities, his interests, his needs. The Group-Study Plan in the hands of skilled teachers gives as close an approach to individual instruction as the modern classroom affords.

The teacher is rarely confronted with the entire class, every individual is engaged in study for three quarters of the time. The teacher meets little groups while others study.

Group making and group changing are facilitated by the use of standard mental tests and by diagnostic scales and tests.

The book provides as illustrations Group-Study Plan outlines for lessons in different subjects, and ought to prove very useful to all those engaged in working similar plans. Indeed even teachers who can adopt only a very modified Group-Study Plan may find many useful suggestions provided here.

Matter and Method in Education : by M. Sturt and E. C. Oakden. (Kegan Paul. Pp. 345+xiii. 7s. 6d.)

Once again the authors have combined in a somewhat rare accomplishment, the production of a delightfully written, interesting, and at the same time sound, book on education. It is intended chiefly for students needing a text-book in Education, and for those of the outer world who take a friendly interest in the elementary school, but it will be useful to anyone interested in schools elementary or otherwise, and in education in general.

It can be thoroughly recommended as a book likely to give intending teachers a healthy outlook on their future work. The fresh and inspiring outlook of the authors is bound to influence the student reader. They look on things as they are in the schools, they see both the good and the bad and they do not hesitate to praise or condemn.

Hints and suggestions are numerous ; it is true that many of them are to be found elsewhere, but they are always freshly put, and often new light is thrown on old situations.

It is clear that the authors have a wide knowledge of elementary schools, teachers and children and that much of their illustrative material is gained from actual experience. A varied and useful bibliography is given.

Science Through the Ages : by Marion Florence Lansing. (Harrap and Co. Pp. 242. 2s. 6d.)

This is a series of stories relating to important discoveries from the Age of Fire to the beginning of the Age of Electricity. The book serves as an interesting introduction to pioneers in science who have created our modern world. The stories are none the less interesting to those who have already met these pioneers, for we meet them now at the high moments of their achievement, and we can feel something of the thrill of the discoverer. The tales are attractively told and suitably illustrated. One criticism on a point of detail : in the table on page 143, showing the evolution of our alphabet, the representation of the Phœnician Gimel and the Greek Gamma by the letter C might cause some misunderstanding, and it would probably have been better to omit it. As it stands the table might give the impression that the English alphabet corresponds letter for letter with Greek and Phœnician originals.

Organization and Teaching of Art : by Leon Loyal Winslow. (Warwick and York, Inc., Baltimore. Pp. 243. $2.30.)

The author of this admirable book, now in its second edition, makes a marked increase in the volume's practicability and usefulness by the inclusion of an appendix containing a further clarification and more ample development of the elementary and Junior High School programmes. Mr. Winslow now presents an excellent text book in methods for use in normal art courses, assuming that all teachers of art, drawing, industrial arts, and all allied subjects should possess an appreciative knowledge of the entire field of elementary and secondary art education. He outlines in a fresh and vigorous manner, both for the elementary and Junior High Schools, a working programme which should enable the student to keep constantly in mind the relationship which each particular unit of instruction bears to the curriculum as a whole. This book should be in the hands of all art teachers.

Reading and Study : by G. A. Yoakam, Ph.D. (Macmillan Company. Pp. 502. 8s. 6d.)

This is a somewhat lengthy account of methods by which pupils may be taught to develop effective means of study by forming appropriate reading habits.

The author shows that different methods of reading are required for different purposes, supporting his views by giving the results of experiments ; he analyses the factors involved in each type of reading and study, and shows that specific teaching in the different methods is required if the ultimate object of teaching, to free the child from the teacher, is to be attained.

Each chapter concludes with a list of suggestive problems and references for further reading.

The book is primarily intended for teachers in primary schools, who will find much useful advice on the problems which arise in their classes.

Parents and Teachers : by M. G. Mason. (Ginn and Co. Pp. xv+317. 8s. 6d.)

The Parent-Teacher Association and its Work : by J. E. Butterworth. (Macmillan. Pp. ix+149. 5s. 6d.)

The first of these books, both dealing with the same subject, is published under the auspices of the National Congress of Parents and Teachers in response to a demand for a comprehensive treatment of the origin, purposes and accomplishments of parent-teacher associations. The five different chapters forming part one are each supplied by an authority on the particular aspect of the subject. The facts of Part II, contributed by experienced parent-teacher workers, have been edited and arranged by Martha Sprague Mason. The book gives a very comprehensive and useful account of the movement.

The second account is the result of a piece of research work by Professor Julian E. Butterworth, of Cornell University. In addition to chapters on the function of education and of Parent-Teacher Associations in particular, he gives many statistics as to the number of such bodies and the types of work undertaken by them, together with suggestions as to organizations.

Ruskin as Literary Critic : Selections edited by A. H. R. Ball. (Cambridge University Press. Pp. 291. 4s. 6d.)

It was a happy thought to plan a book which would give a representative selection of Ruskin's discussions of literary matters, and this work should be of interest both to students of literature and of æsthetics in a more general sense.

How to do Research in Education by C. V. Good, Ph.D. (Warwick and York. Pp. 298. $2.60.)

This handbook of the literature of educational research is the outcome of patient labour by the author. It is primarily intended for use in the United States of America, and endeavours to stimulate scientific thinking by the reader on such problems as the nature of research, the sources of information, techniques in collecting and presenting data, interpretation of data, the reporting of investigations, and the training of research workers.

In spite of the extensive bibliography there is no hint that students may find valuable material in the literature of impoverished Europe.

Greek Thought and the Origins of the Scientific Spirit ; by Léon Robin. (Kegan Paul. Pp. xx+409. 21s.)

This is another volume of what the publishers rightly dsecribe as one of the most " ambitious adventures in the annals of book publishing." It incorporates the French series, " L'Evolution de l'Humanité," but a number of important volumes are being added to that series under the general editorship of Mr. C. K. Ogden. The present work is a comprehensive and erudite study of Greek thought as the origin of the scientific spirit, extending from the earliest Greek writers to Plotinus and the Neo-Platonists. It undoubtedly constitutes an invaluable study of the whole subject of Greek thought.

The Bases of Modern Science : by J. W. N. Sullivan. (London, Ernest Benn, Ltd. Pp. 246. 12s. 6d. net.)

Mr. Sullivan, well known as a writer on science subjects, has attempted to give the main ideas of physical science in terms that can be understood by the ordinary general reader. Whether anybody could succeed in this task is, to many of us, doubtful, but here is an interesting effort. Chapters, with no

mathematical symbols whatever, deal with such subjects as "The Ether Theory," "The Electric Theory of Matter," "Relativity," "The Finite Universe."

A book that is, on the whole, worth the effort that has to be made to read it.

Materials and Methods in the Middle Grades: by J. L. Henderson. (Ginn and Co. 8s. 6d. Pp. 375.)

The author, who is Professor of Secondary Education in the University of Texas, has written this book to assist teachers of scholars between nine and fifteen years of age. He thinks, probably with some degree of truth, that this section of the schools has been rather neglected. He divides his book into two parts, the first dealing with "Foundations of Materials and Methods," and the second with "Materials and Methods Applied." The author has evidently an intimate knowledge of his wide subject, has selected his material with discretion, and gives copious references for further reading, but these are entirely to American publications.

Statistical Methods for Students in Education: by K. J. Holzinger. (Ginn and Co. 16s. 6d. Pp. 372.)

This useful book, "for students in education, who usually have had little training in mathematics," deals with such elementary mathematics as graphical representation and logarithms by way of introduction to simple statistical methods. Later the author devotes chapters to the percentile method, partial and multiple correlation, and elementary theory of curve fitting. All difficult proofs are omitted, actual problems are worked out, and many exercises are provided. The book will probably meet the demands of many students and teachers engaged in educational research involving the application of statistical methods.

Whither Mankind: by Charles A. Beard. (Longmans. Pp. vii+408. 12s. 6d.)

This is a collection of essays mostly by men and women of outstanding reputation, and for those who like a volume of essays on very varying topics of the kind, it would be hard to surpass. The authors include such well-known writers as Bertrand Russell (who deals with Science), Emil Ludwig (War and Peace), Havelock Ellis, who writes a characteristic article on the family; and Sidney and Beatrice Webb (Labour). Of special interest to readers of THE FORUM will be John Dewey's discriminating article on Philosophy and Everett Dean Martin's on Education. Mention must also be made of the remarkable chapter on the Civilization of the East and the West in which Hu Shih questions the usual assumption of the spiritual nature of the East as compared with the materialism of the West.

Chemistry in Daily Life: by S. Glasstone. (London, Methuen and Co., Ltd. Pp. 250. 6s. net.)

This book, which the author was stimulated to write as a result of a course of extension lectures and a series of broadcast talks, is a very genuine and successful attempt to interest the general reader in the achievements of chemistry. After a preliminary chapter dealing with the historical development of the science, Dr. Glasstone writes lucidly and easily upon, among many others, such varied topics as "The Structure of Matter," "Our Daily Food," 'The Synthesis of Dyes," "Artificial Food and Clothing." Each chapter is followed by questions, topics for essays, suggestions for further study and experiments, and references to books which can be recommended for additional reading.

Intermediate Logic : by J. Welton and A. J. Monahan ; revised by E. M. Whetnall. (University Tutorial Press. Pp. 508. 10s. 6d.)

This is a third edition of a book which has proved its usefulness to students of logic. The changes include a modification of the classification of terms, a criticism of the traditional treatment of propositions, the re-writing of the chapter on the Postulates of Induction, the inclusion of a chapter on the categories and predicables in place of one on the predicables only, and some alterations in the chapters on Method.

These alterations bring the book into line with the results of modern logical thought.

Handbook of Commercial Geography : by Geo. G. Chisholm, M.A., B.Sc., Hon. LL.D. (Edin.). Eleventh Edition. Revised and edited by L. Dudley Stamp, D.Sc., B.A. (Longmans, Green and Co. Pp. 825. 25s.)

This is the eleventh edition of a standard work now revised by the Reader in Economic Geography in the University of London. The most reliable of recent statistics have been selected and substituted for earlier figures and extensive alterations made throughout, bringing the book right up to date. It will enhance even further this authoritative work.

Great Britain, from Adam Smith to the Present Day : by C. R. Fay. (Longmans, Green and Co. Pp. 458. 12s. 6d.)

This is a useful economic and social survey, divided into four main parts, the first dealing with the financial policy of great statesmen from Walpole to Chamberlain ; the second with the developments of trade and transport ; the third with agriculture and industry ; and the fourth with labour. The strictly historical elements are blended in an excellent manner with the more theoretical, philosophical, and even literary aspects of the period.

Curriculum Investigations : by Franklin Bobbitt. (Supplementary Educational Monographs, School Review, U. of Chicago. Pp. 204.)

Written with the co-operation of eleven investigators it covers a wide field and attempts to establish how the curriculum should make contact with the requirements and interests of life. A quantity of statistical information is given. The researchers will find the work worthy of study and suggestive of further lines upon which investigation might run.

Organized Research in Education : by H. B. Chapman, Ph.D. (Published by the Ohio State University Press. Pp. 221. $1.50.)

This monograph, after a short history of educational research in various countries up to 1927, is devoted to detailed accounts of the development of organizations for educational research in the United States of America, their duties, their prerogatives, and the nature of the work actually performed by them.

Summary of Investigations relating to Grammar, Language, and Composition : by R. L. Lyman. (University of Chicago Press. Pp. 302.)

This Supplementary Educational Monograph contains a valuable summary and bibliography of American investigations relating to the usage of English, the curriculum, and methods of teaching English.

Rhythm in Handwriting : by Irene Maguiness. (Heffer. Pp. vii + 64. 3s. 6d.)

A most interesting study dealing with varied aspects of the process of writing, including movement, æsthetic values, and educational values ; written by a teacher of wide experience who is also a teacher and student of art.

Health and Cleanliness : by W. A. Muir and G. H. Green. (Health and Cleanliness Council. Pp. vii + 63.)

This is explicitly a book on the teaching of elementary hygiene in which a medical officer of health and a teacher of educational psychology have combined, the latter dealing especially with the methods of making hygiene interesting to pupils and a hygienic way of living attractive to them. The book seems to the reviewer one of real practical value for teachers.

Form and Style in Poetry : by W. P. Kerr. (Macmillan. Pp. xiii + 384. 10s. 6d.)

This is an exhaustive study of the subject based on lectures and notes by an acknowledged authority on poetry, the late Professor W. P. Kerr, and edited by his successor, Professor Chambers. Professor Chambers has performed a real service to students of English literature in the work which he has undertaken.

Stories from Sa 'dé's Bustán and Gulistán : translated and edited by Reuben Levi, M.A. (Chapman and Hall. Pp. xix + 160. 21s.)

This beautifully printed book, by the lecturer in Persian in the University of Cambridge, is the fifth of the series "The Treasurehouse of Eastern Story," under the general editorship of Sir Denison Ross. It is a valuable book for students of Persian thought and literature.

Modern English : by J. H. Jagger. (University of London Press. Pp. 236. 6s.)

We are glad to welcome a new and revised edition of this excellent book, which has already made its reputation among students and teachers of English. It is packed with good scholarship and good sense.

The English Literature Library : The Birth of Romance, Some Little Tales, Rogues and Vagabonds, The Comedy of Life, Balls and Assemblies, Romance in History : edited by R. Brimley Johnson. (The Bodley Head. About 150 pp. each. 3s. 6d. each)

A most useful series for introducing the student to the different periods and aspects of our comprehensive English literature.

Students' Life and Work in the University of Cambridge : by Karl Breul. (Bowes and Bowes, Cambridge. Pp. 70. 2s.)

This is the third edition (revised and partly re-written) of two lectures which Professor Breul originally published in 1908.

The Money Game : by Norman Angell. (Dent. Pp. viii + 168. 12s. 6d.)

A very ingenious invention for the teaching, by the play method, of fundamental ideas about money and economics. It is one that will be enjoyed and which will be profitable and entertaining to adults as well as senior pupils.

The Beautiful in Music : by Max Schoen. (Kegan Paul. Pp. xii + 140. 4s. 6d.)
This is a useful study of such topics as the variety of musical experiences based upon experimental literature and theoretical discussion. The survey of the literature, however, is by no means complete.

Everyday Art : by D. D. Sawyon. (Batsford. Pp. 242. 12s. 6d. nett.)
This is a delightful book and worthy the appreciation given it by Sir Michael Sadler in the foreword. It is profusely illustrated and rightly described as a book not only for children and teachers, but for parents. Indeed, it is primarily for the teacher rather than the pupil.

Universities Year Book. 1929 : edited by T. S. Sterling. (Bell. Pp. xiv + 852. 7s. 6d)
This valuable year book grows in usefulness as it does in size from year to year.

NOTICES OF FOREIGN JOURNALS.

Zeitschrift für Pädagogische Psychologie : Verlag Quelle und Meyer, Leipzig.

July-August, 1928. Pp. 387-389. *Vernehmung von Kindern und Jugendlichen durch die Polizei.* The Saxon Ministry of Justice has recently issued for the guidance of the police, a statement about the interrogation of children and young persons. This includes witnesses up to age sixteen, persons accused up to age eighteen. The questioning by the police should be restricted, they should be assisted by the schools and by a teacher or other person skilled in juvenile psychology. Children should not be kept waiting. Suggestive questions must be avoided. Children need not be accused of lying because they firmly believe the suggestions of fancy. In Leipzig a memorandum for the criminal assessor has been issued by the Psychologische Institut des Leipziger Lehrerverein in association with the police authorities.

September. Pp. 417-434. Fritz Giese: *Schultypus und Leistungsbefund bei Intelligenzprüfungen.* The results of intelligence tests on boys and girls in different types of school and at varied ages have been compared. At fourteen years of age the averages show Volks-schule 157, Mittel-schule 231, Real-schule 237, Oberreal-schule 240, Gymnasium 259. The dispersion is great in the Mittel-schule, narrow in Oberreal-schule. On the whole the commercial schools rank higher than the trade schools. The comparisons of boys and girls are not very conclusive, but girls aged fourteen to seventeen in the Lyzeum do very well. The children of officials and merchants do better than those of the artisan or unskilled group. The children in Halle do better than those in Stuttgart. References are given to previous papers by Giese and others.

October. Pp. 465-476. H. Werner : *Über magische Verhaltungsweisen in Kindesalter.* Children are compared with lower races in their magical attitude of mind varying on a wide range from the more or less playful to the purely religious. Rite, ceremony, custom, oracle, wish, formula, talisman, amulet, sacrifice, mortification are traced between ages three and thirteen. On pages 494-496 is a questionnaire on personal customs drafted by Martha Muchow and issued by the Hamburg University Psychological Laboratory (Hamburg 1, Domstr 9). The object is to collect exact information on such

magic customs and their development. Thus question 15: "Have you hitherto always kept these customs secret or do you talk about them to other people? To whom? In case you do not talk about them, why not? How was it in your youth? Did you at any time talk to grown-ups about them? To friends and school-fellows?" Answers may be anonymous.

November. Pp. 516-536. M. HEINAN AND P. SCHRÖDER: *Der Wortschatz-test.* Terman's vocabulary test of 1916 was adapted first by translating his 100 English words, afterwards by substituting a selection of 50 German words, so as to avoid words either too familiar or too strange. The object was to find whether the words belonged to the pupil's vocabulary. Formal definition was not expected. Oral answers were preferred to written. The list contained only one word "apfelsine" on which no one failed, no word which no one knew. The list was presented to the pupil in print and read over aloud. The best girl, aged fourteen, missed two, the worst forty-three of the fifty words. The best class F1 was a *pro tem.* class of able girls learning two foreign languages in a Hamburg elementary school. The higher schools gave not only better results, but less scatter within the class, indicating a more even grade of intelligence. No doubt better homes improve vocabulary. On the whole words of foreign origin like "seismograph," "protokoll," "obelisk" are the most difficult.

Page 536. W. HOFFMAN AND W. STERN are raising a discussion on the desirability of having at least one school psychologist on the staff of each higher school.

Page 589. T. HELLER supported this proposal at the Hamburg scientific conferences.

April, 1929.

Contents include an article by Joh. Behr on "Sexualpädogogik und erste Biologie-unterricht," and also a notice of "Sittlichkeitsvergehen an höheren Schulen und ihre disziplinare Behandlung," by W. Hoffmann and W. Stern, published by the Prussian Ministry for Science, Art, and Education.

The Prussian minister has had documents collected concerning more than 500 disciplinary cases relating to sexual offences in the higher schools during the years 1921-1925. These have been handed over to the two authors with a request for their opinions. They report independently. Statistically one must be careful; the report concerns only the cases treated by discipline, not those treated educationally; it is only concerned with transgressions detected, and proves nothing about the very numerous schools which make no report. There remain the 552 cases, enough to afford a classification according to the nature of the transgression, the standing of the accused, and the wisdom of the authorities. The type of delinquency changes progressively with age, with an unhappy maximum in Ober or Unter Tertia (classes are counted from Prima at the top). If the faults of the youngest are the most venial and the most easily detected, the complaints from Prima, though very scarce, are sometimes most serious, and there is always a suspicion that the apparent rarity of offences at the top of the school may be illusory, due to greater secrecy and failure of detection.

Justice to delinquents is only possible when exceptions are seen in the light of normal adolescent development. Too often parents and teachers seem to have forgotten their own youth. Professor Stern ventures to suggest that when the school medical service and children's court are both beginning to view juvenile depravity in the light of normal juvenile development it might not be a bad thing if in every school there was at least one teacher who knew something about physiology, psychology, and Jugendkunde.

Viewed in the light of normal sexual development, the question arises about the exceptional cases, whether in their own interest or in that of their schoolfellows they can be retained in the school. Curiously, whilst the children's courts have moved towards favouring educational treatments, the schools show a tendency in favour of discipline and of punishment.

The masters' meeting is not ideal as a judicial tribunal. It tends to echo the head master and to support him without asking for evidence too terrible to relate. The boy is not confronted with his accusers, nor defended by counsel. The Lehrer-Kollegium is also an interested party, tending to vindicate the good fame of the school by a sentence of expulsion or threat of expulsion.

Hence protests from parents, consulted at too late a stage or merely informed of *res judicata*. Hence appeals to provincial educational authorities, or even to the public courts. If it is only necessary to separate a boy from the school, it is not necessary to blacken his character by an endorsement on his leaving certificate which may make it difficult for him to secure work or to retrieve his character, which may even be a life sentence. It would be enough to note on the certificate that the boy left school owing to circumstances in which he was not free from blame and about which questions could be answered by the parents or head master. Better still, it is suggested that after dismissal a boy's career should be followed and that if he makes good in a few years' time he should be allowed to return the leaving certificate and to receive a clean one without the endorsement.

In the educative treatment of younger scholars it is necessary to distinguish types of boys: the quiescent, the precocious, the self-controlled, and types of causes, hereditary mental make-up or unsatisfactory home conditions, and to decide whether the boy is misled or misleading. Educational help is only possible when a boy can consult a master in confidence, that is when his statements cannot be used as evidence against him. Education and discipline seem to be mutually exclusive; education must try to work in terms of known transition phases, discipline tends to ignore them.

Nominally these reports are the case for the prosecution; in essence they are the defence of the boy and a challenge to disciplinary treatment by the school. H.R.

PUBLICATIONS ALSO RECEIVED.

ENGLISH.

The Beacon Study Readers: edited by Frank Roscoe. First Lessons (Pp. 96. 1s. 4d.) Book 1. (Pp. 128. 1s. 6d.) Teacher's Manual to First Lessons and Book 1. (Pp. 104. 2s.) Book 2. (Pp. 160. 1s. 9d.) Book 3. (P. 192. 2s.) Teacher's Manual to Book 2 and Book 3. (Pp. 96. 2s.) Book 4. (P. 224. 2s. 3d.) Book 5. (Pp. 256. 2s. 6d.) Teacher's Manual to Book 4 and Book 5. (Pp. 64. 2s.) (Published by Ginn and Co.)

The Trumpet-Major: by Thomas Hardy, abridged by Christina F. Knox. (Macmillan. Pp. xiv+168. 1s. 9d.)

The Rivals: by Richard Brinsley Sheridan. (Macmillan. Pp. xxvii+131. 1s. 9d.)

Thomas Fuller, selections: edited by E. K. Broadus. (Oxford, Clarendon Press. Pp. xvi+206. 3s. 6d.)

Matriculation English: by J. W. Marriott. (Harrap. Pp. 263. 2s. 6d.)

Foundations of English Grammar and Composition : by John D. Stephenson. (Methuen. Pp. viii+103. 2s. 6d.)

Present-Day Prose : chosen by E. A. Greening Lamborn. (Sidgwick and Jackson. Pp. xii+244. 2s. 3d.)

Some Chapters on Writing English : by J. H. Gettins. (Longmans. Pp. xii+211. 3s.)

A Book of Blank Verse : chosen by E. E. Reynolds. (Macmillan. Pp. xvi+116. 1s. 6d.)

Exercises in English : by E. E. Reynolds. (Cambridge, at the University Press. Pp. ix+146. 3s. 6d.)

Use and Abuse of English : by Rosaline Musson. (James Thin. Pp. xvi+108. 1s. 6d.)

Byron's Vision of Judgment: edited by E. M. Earl. (Oxford University Press. Pp. 78. 2s.)

The Whirligig of Taste : by E. E. Kellett. (Hogarth Press. Pp. 160. 3s. 6d.)

FOREIGN LANGUAGES.

A Book of Latin Prose and Latin Verse, selected by F. A. Wright, M.A. (Routledge and Sons, Ltd. Pp. 204. 5s.)

Le Roi des Montagnes : Edmond About. (Oxford University Press. Pp. 176. 2s. 6d.)

L'Épopée de L'Eunden : by Claude Farrère et Paul Chack. (Harrap and Co. Pp. 122. 1s. 6d.)

Modern German Short Stories: edited by H. F. Eggeling, M.A. (Oxford Clarendon Press. Pp. 160. 3s. 6d.)

GEOGRAPHY.

An Intermediate Commercial Geography: Part II : L. Dudley Stamp. (Longmans. Pp. xv+515. 12s. 6d.)

The Trade of the Indian Ocean : by V. Anstey. (Longmans. Pp. xvi+251. 8s. 6d.)

Voyages of Great Pioneers: edited by V. T. Harlow. (Oxford University Press. Pp. iv+380. 6s.)

The Changing World : by A. Wilmore. (Bell and Sons. Pp. 63. 1s.)

HISTORY.

The American Colonies, 1492-1750 : by M. C. Jernegan. (Longmans. Pp. xxxiii+457. 7s. 6d.)

The Headway Histories, Book 4 : by F. W. Tickner. (University of London Press. Pp. 160.)

Man's Great Adventure : by Stephen Southwold. (Longmans. Pp. 255. 2s. 6d.)

Outlines of Ancient History: by D. M. Vaughan. (Longmans, Green and Co., Ltd. Pp. xii+214 and Time Chart. 2s. 6d.)

Patriots of the Nineteenth Century: by E. F. Malcolm Smith. (Longmans, Green and Co., Ltd. Pp. xi+212. 3s. 6d.)

MATHEMATICS.

Commercial Arithmetic : by F. L. Grant and A. M. Hill. (Longmans, Green and Co. Fifth Edition. Pp. 425. 5s.)

Wave Mathematics : by H. T. Flint. (Methuen. Pp. 114. 3s. 6d.)

Bell's Everyday Arithmetic. Books II and III : by J. B. Thomson, M.A. (Bell and Sons, Ltd. Pp. 36 and 40.)

Graph Book—an Excercise Book and Text-book : by C. V. Durell, M.A., and A. W. Siddons, M.A. (Bell and Sons, Ltd. Pp. 80. 1s. 9d.)

SCIENCE.

The Great Chemists : by E. J. Holmyard. (Methuen. Pp. 135. 2s. 6d.)

MISCELLANEOUS.

Applied Design in the Precious Metals : by P. Wylie Davidson. (Longmans, Green and Co. Pp. 143. 7s. 6d.)

The Child's Development and Health Record : by Harold O. Rich and Justin A. Garvin. (Appleton and Co., New York. Pp. 107. $2.50.)

The Forum of Education.

Vol. VII. No. 3. November, 1929.

In Memoriam.

SIR GRAHAM BALFOUR.

Sir Graham Balfour's reputation will securely rest on his twenty-three years' work in the County of Stafford, a year (1902-3) as Director of Technical Instruction, and then from 1903-1926, when he retired, as Director of Education. He came somewhat late in life to educational administration. Born in 1858, and educated at Marlborough and at Oxford (Worcester College), he obtained a First-Class in Classical Moderations and a Second in *Lit. Hum.*, was called to the Bar in 1885, abandoned the legal profession and travelled extensively, finding a home for a time with his cousin, Robert Louis Stevenson, at Samoa. On his return to Oxford he wrote his well-known life of the novelist, and in 1895 began his apprenticeship in educational work under the Delegacy of Local Examinations. The fruit of this was (in 1898) the standard work on Educational Systems in Great Britain and Ireland.

His appointment to Staffordshire came at a critical time—the year after the passing of the Balfour Education Act of 1902. The new Director had, therefore, an unrivalled opportunity, and he brought to the task a mature and able mind, immense powers of work, a wide experience of men, affairs, and things, and an imagination and vision not dulled or blurred by administrative and educational conventions. It must suffice here to note that Balfour fully realized the immense possibilities, no less than the great practical difficulties, that Staffordshire offered in a county of some 600,000 persons, largely agricultural, but with two densely populated industrial areas—the tangle of competing local authorities, the absence of uniformity, the existing deficiencies in schools, staffs, and equipment, and the necessity of providing by a co-ordinated scheme for primary, secondary, and technical education. What he

accomplished could best be grasped by comparing the position in 1926 with that of 1902. When the University of Birmingham included him, in 1924, in a short but distinguished list of Hon. LL.D.s, this recognition of his services to all forms of education was acknowledged to be a proper tribute. For, unquestionably, at his retirement Balfour was the most notable Director of Education in Great Britain, and both the quality and quantity of his achievement had made him a real pathbreaker, and his county in many ways a model that had inspired much work outside it. In temper an idealist, with no small dash of the romantic—as all who enjoyed the privilege of his friendship knew—in practice, a master of detail, with a wonderfully cool head and a quiet but unremitting driving power, Balfour succeeded because he knew how to work with county and local committees, knew how to suppress himself—for he did not care who got the credit if the right thing were only done—and because each particular move fitted into a broad strategic plan. His courtesy, sympathy and patience were inexhaustible; education became to him almost a "second religion": he never resented criticism, and he never remembered successful opposition. His ability, his knowledge, and his judgment were unquestionable. But *The Times* truly summed him up when it said that first and foremost he "was a great gentleman."

CHARLES GRANT ROBERTSON.

The Relation of Temperament and Intelligence to Scholastic Ability.

By David W. Oates.

It is clear that the discrepancy that prevents complete agreement between our measures of scholastic achievement and intelligence does not arise entirely through errors in our measurement of these two qualities, but is probably due to the presence of factors in scholastic achievement other than intelligence. There are some subtle factors operating in scholastic ability which scientific psychology has not yet been able satisfactorily to isolate and identify. This investigation has been carried out in the hope that it might throw further light upon the determining factors in successful school work, and ultimately upon achievement in general.

Scholastic success, it may be argued, is a phenomenon as complex as life itself, varying between wide limits from school to school and from year to year: its inevitable breadth and complexity, in the opinion of some, are sufficient to render it imponderable. It is conceded that it is impossible at this stage of knowledge to isolate and express in quantitative terms many of the factors in so complex a phenomenon, but this fact should not prevent our endeavours to investigate those factors which can, apparently, be isolated and treated quantitatively. Provided we recognize that there are factors in the complexity that cannot as yet be analysed, our efforts to assess the relative contributions of some of the elements may help to increase our understanding of the efficiency of the complex result and thus increase our power to control it.

THE DATA.

The subjects of the investigation were 297 boys attending a Secondary School, and the following data were obtained:

(*a*) *Scholastic Tests.*

(1) The results of the school Terminal Examinations.

(2) The records of marks awarded for work allotted for preparation in private study periods and at home.

(*b*) *Intelligence Tests.*

All the subjects were given a set of six Intelligence Tests which were selected as a result of a previous investigation which has been reported.* These tests were Number Series, Absurdities, Best Reason, Cipher, Analogies, and Common-sense. Further details need not be given here.

(*c*) *Ratings for Non-Intelligence Traits.*

Fourteen members of the school staff who had known the boys intimately from the date of their admission to the school—periods ranging from one to five years according to the subject's seniority in the school—prepared estimates on four non-intelligence qualities. Two independent ratings were prepared for each boy by the two masters who were best acquainted with the particular form in which the boy was working at the time of the investigation.

The difficulty of identifying psychological traits was recognized,† and attention was, therefore, focussed on four dynamic traits which, it was thought, should come definitely to the surface in the ordinary school environment. The four traits upon which judgments were prepared were the following, with which are given a brief summary of the notes supplied to each master making the judgments.

(1) *Persistence.*—This will be manifested as the tendency to continue tasks in the face of obstacles. Special attention to the attitude of the pupil towards problem work and similar situations will assist when making this rating.

(2) *Control of Attention.*—Observed in the degree of readiness of application to work and the ability to withstand distraction. This quality is not to be confused with the quality which causes a boy to persevere at a task in spite of obstacles, but makes itself manifest as the tendency to avoid change continually arising through fluctuating attention or merely for the sake of change.

(3) *Drive or Impulsion.*—To be estimated from the amount of energy available, as manifested in various school work and activities, and the extent to which the discharge of energy is free and strong.

(4) *Speed.*—Expressed in various ways in school work, for instance, speed in coming to a decision or in accomplishing various school tasks. It ranges from the slow, deliberate worker to the very rapid worker.

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* THE FORUM OF EDUCATION, VI, No. 1, February, 1928. Pp. 38-62.

† Present writer, *Brit. Journal Psychology*, XIX, 1, July, 1928, p. 10; and H. Rugg, "Is the Rating of Human Character Practicable?" *Journal of Educationa Psychology*, XIII, p. 93.

The four traits were discussed in a staff meeting when the precise significance of the qualities was considered and any doubtful points discussed, and also the probable distribution of the estimates over the seven groups. It was suggested that though the majority of the boys would probably be grouped around the mark in the scale indicating the possession of an average amount of the trait under consideration, it was not necessarily so in any particular school form. The masters were also advised to select the most extreme cases for each trait first and to assess the marks to other boys in the form with reference to these. After observing the boys with a view to making assessments on these qualities, the masters made their judgments, working quite independently, by recording a numerical mark ranging from +3 to −3 for each trait on the prepared sheets supplied to them. This seven-class scale in positive and negative grades on both sides of zero, which indicates the median degree of the quality, allows of as much differentiation as most judges are capable of observing.

DISTRIBUTION OF SCORES AND RATINGS.

The scores in the Intelligence Tests show a regular increase for each year in the age groups from 61.4 in the 11-year group to 88.6 in the 17-year group. The full table need not be given here. The distribution of scores in the different forms is given in Table I.

TABLE I.

DISTRIBUTION OF INTELLIGENCE TEST SCORES IN FORMS.

Form.	*Average.*	*Above Average for Age Group.*	*Below Average for Age Group.*
VI	87.5	10	10
VA	86.7	18	10
VB	88.7	16	13
IVA	78.0	27	7
IVB	74.8	16	17
R	70.7	3	13
IIIA	71.7	22	12
IIIB	62.1	11	22
IIA	65.0	21	14
IIB	61.0	14	21

The forms are select groups, the A Form in each year being the superior form as determined by school examinations. In all cases except in Form V, the A division registers a higher score than the

B division, and it may be inferred, therefore, that their success in school examinations is in part attributable to superior intelligence. A better indication is afforded by columns 3 and 4, in which are given the number of boys in each form above or below the average score for intelligence of the age groups to which they belong.

VB is obviously a form in which factors other than intelligence are playing a part in determining the failure of the boys to gain promotion to the A division. The Remove Form is a small group of boys who may be termed " school misfits," and they are accordingly less homogeneous in point of age and school standing than any other group. It was unexpected, however, to find that they rank so low for intelligence. The interesting points that arise in these two forms will be referred to later when we consider the non-intelligence qualities.

The distribution of the ratings for temperament qualities made by the fourteen judges is given in Table II.

TABLE II.

DISTRIBUTION OF RATINGS FOR TEMPERAMENT QUALITIES.

Quality.	+3	+2	+1	0	−1	−2	−3
Persistence	15	84	145	137	130	66	19
Control of attention	3	76	129	160	132	72	24
Drive	6	52	167	180	123	52	16
Speed	2	52	146	188	121	65	22
Per cent. here	1.1	11.1	24.6	27.9	21.2	10.7	3.4
Normal	2	9	23	31	23	9	2

On the assumption that the normal frequency curve for the distribution cuts the base line at 2.8σ the frequency for our seven groups has been calculated, from which it will be seen that the distribution for our total ratings is fairly closely in accord with the probability curve.

RELIABILITY OF THE ESTIMATES OF TEMPERAMENT QUALITIES.

The coefficients of reliability of the estimates, obtained by calculating the correlation between the independent estimates of the judges for each of the qualities, are given in the following table :

Table III.
Reliability of Estimates.

Form.	*Persistence.*	*Control of Attention.*	*Drive.*	*Speed.*
IIA	.552	.433	.291	.505
IIB	.814	.863	.668	.477
IIIA	.683	.328	.542	.451
IIIB	.747	.265	.289	.487
IVA	.277	.428	.094	.367
IVB	.283	.040	.040	.068
R	.878	.576	.765	.783
VA	.583	.755	.747	.598
VB	.678	.670	.562	.685
VI	.473	.393	.502	.667

Since this investigation was carried out a valuable paper on the judgment of character qualities has been published by Professor Valentine, in which he suggests that it is better to have assessments made by teachers in collaboration rather than independently, as was done in this case. The example he gives where " one glaring default known only to teacher A may properly influence the mark of the other two, B and C, if told to them, whereas the low mark of teacher A might otherwise be swamped by the good marks from B and C,"* is a valid criticism of the method of independent judgments. In this investigation, however, such a marked case would be known to all teachers making assessments, as any boys in any way remarkable are discussed in the periodic staff meetings for the review of work, and more frequently in the staff common room. Further, in the meetings held to discuss the qualities to be judged, a few exceptional cases were quoted to illustrate the qualities. The method of independent judgments was used here in order that it might be possible to examine the reliability of the estimates, as is done in this table.

With the exception of Form IVB, and perhaps Form IVA, the estimates are satisfactory. Defects in the estimates may be due either to the difficulty of analysing the traits satisfactorily, to lack of capacity of the judges, or to inadequate knowledge of the subjects upon whom estimates were being prepared. In the case of Form IVB the weakness appears to be due, to some extent at least, to the last-named cause. In this form one of the masters making the estimates was the most recently appointed member of the staff and had known the boys in the form for one year only previous to making the

* C. W. Valentine, " The Relative Reliability of Men and Women in Intuitive Judgments." *B. Journal Psychology*, XIX, January, 1929. P. 215.

estimates. Further, some of the boys in the form did not take his special subject at the time the estimates were prepared. This fact probably accounts for the low reliability of the estimates in this particular form. Even if we include these figures in our table, there is an average coefficient of reliability for all estimates of .508, which compares favourably with those obtained by Webb*, .49 in estimates for boys and .47 in estimates for students, and by Waite† who obtained average coefficients of .47 and .50.

The average coefficients for each of the qualities under review are of interest—Persistence .597, Control .475, Drive .450, and Speed .509. From this it appears that, as we should expect, the qualities of persistence and speed are more easily detected, and we, therefore, have the highest agreement between the estimates of the different judges for these qualities. Drive or Impulsion, on the other hand, is a quality that is not quite so prominent in school work, and there is, therefore, greater difficulty in judging the quality and a corresponding lack of agreement in the estimates.

INTELLIGENCE, SCHOLASTIC SUCCESS, AND TEMPERATMENT.

The inter-correlations of the estimates upon the four temperamental traits, the results of the tests of intelligence, and scholastic success as measured by school examinations, are given in the following table.

TABLE IV.

Form	*No.*	*Intelligence and*				*Examination and*				*Intelligence and Examination.*
		Persistence.	*Control of Attention.*	*Drive.*	*Speed.*	*Persistence.*	*Control of Attention.*	*Drive.*	*Speed.*	
IIA	35	.443	.307	.384	.444	.808	.758	.832	.791	.399
IIB	35	.261	.305	.305	.390	.813	.775	.763	.784	.317
IIIA	34	.570	.633	.604	.528	.776	.731	.810	.736	.630
IIIB	33	−.041	.062	.112	.436	.379	.344	.379	.484	.207
IVA	34	.494	.174	.160	.103	.561	.503	.503	.448	.343
IVB	33	−.036	−.094	.083	.311	.435	.501	.421	.324	.149
R	16	−.313	−.493	−.213	−.054	.599	.519	.708	.558	−.131
VA	28	.174	−.174	.041	.227	.696	.466	.494	.596	.264
VB	29	.147	.153	.213	.401	.395	.378	.435	.452	.621
Averages		.189	.097	.187	.309	.607	.553	.594	.575	.311

* E. Webb, "Character and Intelligence." *Brit. Journal Psychology*, Mon. Supplement. P. 27.

† H. Waite, "The Teacher's Estimation of the General Intelligence of School Children." *Biometrika*, July, 1911.

If we take the average of the coefficients in each section of the table, we obtain the following results, for which the partial coefficients have also been calculated.

Table V.

Correlation between Scholastic Ability, Intelligence, and Temperament Qualities.

	Observed Co-efficient.	*Partial Co-efficient.*	*Factor Eliminated.*
Scholastic and Intelligence	.311	.254	Temperament.
Scholastic and Temperament	.583	.563	Intelligence.
Intelligence and Temperament	.186	.0037	Scholastic.

This fully supports the conclusion reached in a previous investigation* that Intelligence and Temperament are essential factors in scholastic ability as measured by school examinations and that they are independent of one another. In the previous investigation the Temperament scores were obtained by the use of the Downey Tests, whereas in this case they are based on the estimates of teachers: to this fact we should probably attribute the higher coefficient of correlation between scholastic success and Temperament obtained here. The natural tendency of teachers to base estimates upon their knowledge of scholastic attainment has been demonstrated,† and it may be assumed that the estimates of temperament traits are coloured to some extent by the unconscious influence of the knowledge of school attainments of the subjects of the investigation. It may be suggested that the estimates of temperament traits are on this account really only another measure of scholastic attainment, and that our three variables may, therefore, be expressed in terms of two variables. By the application of Maxwell Garnett's criterion,‡ there is clear proof that, whatever qualities are measured by our two forms of test and our ratings, we are dealing with three variables which cannot be so expressed.

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* D. W. Oates, *Brit. Journal Psychology*, XIX, July, 1928. P. 17.

† Forum of Education, II, 1924. P. 114.

‡ The condition to be satisfied is that $\text{Cos}^{-1}r_{23}+\text{Cos}^{-1}r_{31}+\text{Cos}^{-1}r_{12}=0$, or that $r_{12}^2+r_{13}^2+r_{23}^2-2\ (r_{12}\cdot\ r_{13}\cdot\ r_{23})=1$; in this case the calculation yields a result of $-.203$, which is far removed from unity.

J. C. Maxwell Garnett, "Education and World Citizenship." 1921. Appendix B. P. 484.

The coefficients in Table IV obtained from nine different groups of subjects based upon estimates prepared by different combinations of fourteen judges, present a uniformity which supports the validity of conclusions based upon the results. This is more clearly seen in Table VI, which indicates the relative order of the coefficients of correlation in Table III. The highest coefficient is numbered 1. This summary suggests a standard of consistency which must be regarded as satisfactory in an experimental investigation of this nature.

TABLE VI.

SHOWING RELATIVE ORDER OF COEFFICIENTS IN TABLE III.

	Intelligence and				*Scholastic Ability and*				*Intelligence and Scholastic Ability.*
	P	*C*	*D*	*S*	*P*	*C*	*D*	*S*	
IIA	6	9	8	5	2	4	1	3	7
IIB	9	7.5	7.5	5	1	3	4	2	6
IIIA	8	5	7	9	2	4	1	3	6
IIIB ..	9	8	7	2	3.5	5	3.5	1	6
IVA ..	4	7	8	9	1	2.5	2.5	5	6
IVB ..	8	9	7	5	2	1	3	4	6
R	8	9	7	5	2	4	1	3	6
VA ..	8.5	8.5	7	6	1	4	3	2	5
VB ..	9	8	7	4	5	6	3	2	1

The higher the school standing of a form the more select the group, as the forms are subject to periodic re-grading throughout the school course. Form VB is, therefore, a group of boys who while not lacking in native intelligence, as is shown in Table I where they register the highest score, are apparently deficient in those temperamental qualities necessary to a satisfactory response to the requirements essential for success in school examinations. School examination tests which aim at the measurement of attainment fail to give any clue as to the particular element in the pupil's whole make-up to which success or failure is due. Positive correlation is not in itself an absolute proof of causation, nevertheless, the facts summarized in our table appear to indicate quite definitely that, in the select group Form VB, scholastic success is most dependent upon native ability, and speed which, as shown in the table, is most closely related to intelligence, and least dependent upon the temperamental qualities that make for Persistence and Control of Attention. In other words, these boys are for the most part in the B division of the form not because of inferior intellectual ability but through deficiency in certain temperamental or character qualities.

From an examination of Table IV as a whole the following facts may be stated briefly :

(1) The correlation between intelligence and temperament traits is low (average .195), only 11 out of 36 coefficients being more than ±3P.E. Speed is most closely related to intelligence, this yielding the highest coefficient in 7 out of 9 cases with an average correlation of .309.

(2) The correlation between intelligence and scholastic ability is higher (average .311), 5 out of 9 coefficients being more than ±3P.E.

(3) The correlation between temperament traits and scholastic ability is high (average .582), the whole of the 36 coefficients exceed ±3P.E.

The relationship between the temperamental traits measured by the estimates and scholastic ability may be more clearly seen by eliminating the effect of intelligence by the usual method of partial coefficients.

TABLE VII.

	Observed Co-efficient.	*Partial Co-efficient for Intelligence Constant.*	*Difference.*
Scholastic Ability and Persistence	.607	.596	.011
Scholastic Ability and Control of Attention	.553	.552	.001
Scholastic Ability and Drive	.594	.574	.020
Scholastic Ability and Speed	.577	.532	.045

This table supports the conclusion derived from Table IV that Temperament, as represented by these estimates, is independent of Intelligence, and indicates clearly that the factors causing correlation between scholastic ability and the qualities of Persistence, Control, Drive, and Speed do not enter as a factor into Intelligence.

Some indication of the relative importance of the qualities under investigation as contributory factors to scholastic success may be obtained by examining the distribution of the estimates for these qualities in the four A and four B forms, the A Form in each year being composed of the superior boys in that year group as determined by school examinations. The figures are given in Table VIII.

TABLE VIII.

Distribution of Estimates in A Forms and B Forms.

Quality.	*Form.*	*Score.*						
		+3	+2	+1	0	−1	−2	−3
Persistence	A	11	51	83	57	48	10	2
	B	—	20	44	66	70	45	15
Control	A	3	46	68	70	54	18	3
	B	—	17	42	75	68	38	20
Drive	A	3	31	84	88	44	12	—
	B	—	13	61	75	60	35	16
Speed	A	2	31	74	81	47	25	2
	B	—	12	56	81	56	35	20

The estimates are higher throughout in the A Forms; the average scores are .55, .30, .33, and .15 in the A Forms, and −.46, −.49, −.35, and −.41 in the B Forms. The best evidence of the part played by each quality in determining success in school examinations is afforded by an examination of the difference of average score in the A and B Forms throughout the four years of the main school course in each of the qualities. These are as follows: Persistence, 1.01; Control of Attention, .79; Drive, .68; Speed, .56. Whatever quality may be represented by the teacher's estimates of Persistence was apparently, therefore, the most important factor in determining school success and the other qualities stand in the order in which they are given here.

Further interesting light is thrown upon the problem by an examination of the inter-correlations of Homework with the Temperamental qualities, Intelligence and Examination Success in Table IX, and the inter-correlations of the various qualities and measures based upon the scores for all the pupils under investigation and given in Table X.

Table IX.

Correlation of Homework with Temperament Qualities, Intelligence and Examination Success.

Form.	*No.*	*Persistence.*	*Control of Attention*	*Drive.*	*Speed.*	*Intelligence.*	*Examination.*
IIA	35	.837	.708	.789	.778	.198	.785
IIB	35	.807	.724	.727	.759	.289	.789
IIIA	34	.712	.579	.648	.612	.249	.674
IIIB	33	.588	.528	.504	.502	.038	.581
IVA	34	.648	.594	.568	.536	.146	.818
IVB	33	.557	.619	.259	.456	.073	.612
R	16	.814	.739	.925	.757	.187	.672
VA	28	.407	.319	.073	.073	0	.567
VB	29	.532	.502	.532	.043	.406	.365
Average ..	—	.661	.590	.558	.568	.176	.651

TABLE X.

	P.	*C.*	*D.*	*S.*	*Examination.*	*Homework.*	*Intelligence.*
Persistence	—	.813	.734	.624	.607	.661	.150
Control	.813	—	.624	.543	.553	.590	.097
Drive	.734	.624	—	.756	.594	.558	.187
Speed	.624	.543	.756	—	.597	.568	.309
Examination	.607	.553	.594	.597	—	.651	.311
Homework	.661	.590	.558	.568	.651	—	.176
Intelligence	.150	.097	.187	.187	.311	.176	—

Here an additional measure is included, based upon the marks obtained by boys throughout the term for individual work done in preparation periods at school or at home, and here termed Homework. Here again the importance of temperamental qualities as compared with intelligence in determining success in school examinations is brought out, the former have an average coefficient of correlation with examinations of .588, as compared with a coefficient of .311 for intelligence. The difference is even more marked in the case of homework, where we have an average coefficient of .594 and a coefficient of .176 respectively. It is interesting to observe from these figures that when a boy is working without the usual control of the classroom Persistence and Control of Attention are even more closely related to his achievement than when he is working under examination conditions, while Intelligence plays a markedly smaller part. The boy who has the strongest impulses or will to succeed and can control his attention does relatively better work when left to his own resources than the boy with most intelligence. This affords experimental proof of the statement of the Consultative Committee on Psychological Tests of Educable Capacity that "among the many factors that determine a child's educational progress, temperament and will are not less important than intelligence or knowledge."* A complete measurement of the factors involved in school work must, therefore, include other traits in addition to intelligence. Indications of the way in which intelligence is used are in some respects as important as information regarding the possession of intelligence alone. Possession and use of intelligence are both essential to achievement—neither is adequate in the absence of the other. Though we are not here concerned with the problem of the origin of these traits which are not definitely intellectual, it is safe to assume that we are dealing with qualities which depend in considerable part upon the individual's native or inherited make-up.

* Report on Psychological Tests of Educable Capacity (1924). Par. 43, p. 53.

It is clear that no amount of these qualities will enable a child of extremely low intelligence to succeed in school studies such as are pursued in a Secondary School, but on the other hand it is indisputable that children of exceptional intellectual endowment frequently fail to make effective use of this intelligence, if we accept school examinations as a measure of the effective use of intelligence, on account of deficient temperamental characteristics such as we have here investigated. It is of importance, therefore, that an effort should be made to assess these qualities as well as intelligence when selecting students for admission to secondary schools. As stated by the Consultative Committee already referred to "no really trustworthy and satisfactory tests of those aspects of temperament which bear directly on educable capacity have yet been elaborated. Instead of testing, therefore, we must for the present be content to observe," for, to quote the report again, "the most important evidence regarding those aspects of character which bear directly on educable capacity is that forthcoming from teachers and others who have had opportunities of observing such traits in an individual pupil over a considerable period of time."* Efforts should be made to render teachers' observations on these qualities more systematic, and to develop the technique of the personal interview. Though the important investigation recently conducted by Professor Valentine was not specifically directed to this particular problem, some valuable suggestions regarding the possible lines that might be followed in any efforts to develop the technique of judgment of these qualities are to be found in his report.†

There is very little data available for purposes of comparison with the results of this investigation as the subject has not been extensively investigated. Our general conclusion is supported by Rogers' investigation of mental tests as a means of selecting university students. Amongst causes which reduce the correlation between intelligence test scores and academic achievement she says, "moral qualities such as the willingness to exert effort and to persist at a difficult task are perhaps the most significant factors."‡

Webb's important investigation, amongst the character qualities under examination, deals with qualities similar to ours: his "tendency not to abandon tasks in the face of obstacles" corresponds to our Persistence, the "tendency not to abandon tasks

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* *Ibid*, par. 90, p. 132.

† "The Relative Reliability of Men and Women in Intuitive Judgments of Character." *Brit. Journal Psychology*, XIX, January, 1929. Pp. 213-238

‡ Agnes L. Rogers, "Mental Tests for University Students." *Brit. Journal Psychology*, XV, April, 1925. P. 411.

from mere changeability " corresponds to our Control of Attention, while " power of getting through mental work rapidly " is similar to our Speed. He also has tests of examination ability and intelligence. His results for these variables are in complete agreement with ours, with the exception that his coefficients of correlation* with tests of intelligence are negative, varying from $-.03$ to $-.18$ where ours are low positive coefficients. For persistence and control he has a correlation coefficient of .94, while speed has correlation coefficients of .62 and .64 respectively with these two qualities. His correlation with examinations is slightly lower (.41 and .39) than ours, but the rapid work is slightly higher—a coefficient of .78 as compared with our .597.

Hughes,† who investigated certain traits by means of ratings on a group of 450 High School boys, included amongst his traits Control of Attention and Regularity—Persistency, the only traits which correspond with ours, and he obtained a coefficient of correlation of .75 between these traits for the whole group.

There is not the necessary introspective and observational information before us to enable us to analyse in detail the psychological nature of the temperament qualities here under investigation. It is obvious from Table X that there is a general factor running through our four temperament variables. If we calculate‡ the relationship of each quality to this general temperamental factor and then eliminate the effect of this from our table, we can obtain an approximate idea of the actual relationship existing between these four qualities. The following coefficients resulted :

	P.	*C.*	*D.*	*S.*
Persistence . .	—	.633	.452	.268
Control	.633	—	.289	.191
Drive	.452	.289	—	.576
Speed	.268	.191	.576	—

As we should expect, Persistence and Control of Attention are closely related, and similarly, Drive and Speed are closely related. This may be due to the actual relationship of the qualities themselves, or on the other hand, it may result from the failure of the judges to discriminate between qualities which are similar in their

* E. Webb, " Character and Intelligence." *Brit. Journal Psychology,* Mon. Supplement, 1915. Table VI.

† W. H. Hughes, *The Journal of Educational Method,* June, 1925. P. 430.

‡ The multiple correlation formula was employed. As an example of the method see Burt's, " The Distribution and Relation of Educational Abilities," p. 53.

manifestation. In the case of the first two qualities, we are apparently dealing with certain aspects of conative tendencies, whereas in the remaining two qualities, particularly the last-named, the speed efficiency of the reaction mechanism appears to be involved. Differences in these qualities rest upon relative differences in the strengths of the instinctive tendencies and the ease with which certain cognitive processes stimulate conative dispositions and set free the impulsive energy of some instinctive tendency. In our Persistence we have evidence of the organization of conative impulses, for as one writer puts it, " The will is not to be regarded as an additional impulse or as a force existing outside impulses and operating upon them. It is rather the system or synthesis of the impulses."*

The fact that our temperament qualities are more closely correlated with examinations (average .588) than with intelligence (average .186) is what we should expect. The processes involved in the intelligence tests tend to be simpler and more unitary in form than those involved in the examinations, which are more complex and call for more varied apprehensions, eductions, and reproductions ; further, success in examinations, is dependent upon prolonged and consistent effort in preparation. The increased conation represented by our Persistence and Control of Attention, as Wild has shown, " makes the eductive processes more accurate and increases reproducibility," and by directing or concentrating mental energy " it causes previously cognized items to be reproduced more rapidly and numerously."†

It is impossible to say how far a high score obtained for some of these qualities is due to the strength of some of the instinctive impulses, to freedom from complexes or to nervous temperament which may seriously handicap persons in the ordinary pursuit of school studies. Another interesting problem which remains to be investigated is the question how far certain forms of mental activity in school have the power to awaken particular conative tendencies in certain boys, thus explaining the success of some students in a particular branch of study as opposed to their failure in other subjects of study. Spearman believes that " the influence of instincts and interests upon cognitive ability has an unexpectedly restricted scope," though he adds : " In certain exceptional cases, however, such an influence is so strikingly suggested as to urge the pressing need for at least further investigation."‡ This, however, is a problem that awaits fuller investigation than it has yet received.

* L. T. Hobhouse, " Mind in Evolution." P. 350.

† E. H. Wild, "Influences of Conation on Cognition." *Brit. Journal Psychology*, XVIII, October, 1927. P. 165.

‡ C. Spearman, " The Abilities of Man " (1927). P. 341.

SUMMARY OF RESULTS AND CONCLUSIONS.

(1) Though it has been found that " brief interviews give little or no reliable evidence of the character of children,"* judgments of temperament qualities based upon long and intimate knowledge of the subjects have a fairly high degree of reliability.

(2) The correlation between Intelligence and Temperament traits is low, and when the partial coefficient is calculated the relationship disappears (average .186, partial coefficient .004). The correlation between Intelligence and scholastic ability is higher (average .311, partial coefficient .254). The correlation between Temperament traits and scholastic ability is fairly high (average .583, partial coefficient, .563).

(3) The factors causing correlation between scholastic ability and temperament do not enter as a factor into intelligence.

(4) Persistence is the most important factor in determining school success : the other qualities under investigation stand in the following order : Control of Attention, Drive, Speed.

(5) In work carried out apart from the usual control of the classroom Persistence and Control of Attention are even more closely related to achievement than in work carried out under examination conditions, while Intelligence plays a definitely smaller part in determining success. The boy who has the strongest impulses or will to succeed and can control his attention when working independently does relatively better work than the boy with better Intelligence but lacking these qualities.

(6) Persistence and Control of Attention are closely related, both apparently depending upon the organization of the conative impulses. Drive and Speed are also related, and this may be attributed to the fact that they both, in some degree, depend upon the efficiency of the reaction mechanism.

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* C. W. Valentine, loc. cit. P. 235.

The Broadcast History Lesson.

By Idwal Jones.

During the last few years interest in wireless teaching has been rapidly gaining momentum. The publication of the Kent Report on "Educational Broadcasting," and the volume "New Ventures in Broadcasting," are landmarks showing the progress made in a comparatively short period. They have also served to arouse curiosity as to the real direction towards which this new educational medium is moving. Recently the British Broadcasting Corporation in their efforts to give greater force to the new medium decided to set up an Advisory Educational Body whose duty it will be to signal directions, whilst in every wireless area machinery is being established in the form of provisional committees for the development of broadcast education. The findings of the two reports, though largely tentative in character, show clearly the need for extensive and thorough inquiry and the lines on which that inquiry can most profitably be pursued. A case has certainly been made for the value of wireless teaching in some subjects, but much experimentation needs to be made in the technique of successful educational broadcasting. The demand is urgent: teachers are anxious to use the new medium of school education. Some teachers, harassed by their failure in omniscience, have always welcomed this helpful guest; others, with the zeal of the newly-converted, have been embarrassing in their praise. Educational authorities have occasionally wondered whether this guest has overstayed his leave, and are extremely anxious to examine all credentials to assure themselves of perfect respectability. Moreover, the interest and watchfulness of academic bodies, which guard jealously the standards of their subjects, have been aroused. Prominent among these is the Historical Association, which is proposing to issue to its branches a questionnaire on the value and technique of broadcast history teaching. The question has been discussed by a group of Swansea teachers, and the present paper is largely based on their discussion

The number of schools in this area which have suitable apparatus for receiving broadcasts is comparatively small owing largely to the difficulty in financing the purchase of a set and of adequately maintaining it when installed. The local education authority is interested, but is unable to help except by the fixing up of the aerial and its maintenance. All the schools which take broadcast lessons, with the one exception of a private school, are elementary.

The consensus of opinion at these schools was that history as a school subject was highly adaptable for broadcast treatment, and that its value had been amply demonstrated by successful courses already given. Some schools give history first place as a suitable subject, but naturally the statements and opinions depended partly on the special interests of the teachers present. It is significant, however, that all agreed that it was at least as suitable as Geography, English, and Nature-study.

The addition of a number of expert but " occasional " history teachers made possible to the staffs of many schools through wireless has done a great deal to stimulate a new interest in the subject, and to put in on a surer place in the curriculum. New aspects of history and new methods of approach have been suggested to teachers, who never had the time or interest to study history as a subject or method. Inquiry revealed that secondary schools do not need to listen to history talks, because they already have trained history teachers who can communicate for their subject that fine enthusiasm which is the flower of all good teaching in the humanistic subjects. The elementary schools are by no means devoid of these enthusiasts ; they may be met in urban and rural school alike ; but they are not enough to go round. The conscientious teacher who is not trained in history feels vaguely that the teaching of this subject is not entirely satisfactory, and is often weak. The reasons for that weakness are not always apparent. There is a curious uncertainty about the aims and purpose of history teaching in the primary school, and a consequent failure in the selection of suitable material. The " Suggestions to Teachers " issued by the Board of Education does not offer much help : " History is the story of the doings of grown men and women, and of the society in which they lived, and this story has to be told to children mostly under the age of 14. It follows that the teacher must deal principally with what children can understand." The substitution of chronology is still occasionally practised on unsuspecting pupils, who thereby acquire a life-long distaste for " history." It is deadly easy for the unenthusiastic teacher to imagine that he has done his duty to history if not to his pupils when he has imparted facts and dates.

On the other hand, the young teacher, keen on his subject and fresh from an advanced course, attempts often to drive into the children's minds historical conceptions beyond their limited grasp and experience. He treats history no longer as a mechanical exercise but as an intellectual exercise. It is a moot point whether history proper should be studied at all up to the age of eleven, but

there can be no two opinions as to the necessity of making historical study in the early stages a work of imaginative rather than intellectual apprehension. The first aim of the history teacher is to extend the children's imagination through time. To do this successfully the teacher must be imaginative, expert in knowledge, enthusiastic for his subject, and sympathetic with the child-mind. It is not easy for the class teacher in the midst of conflicting claims and routine work to turn aside and show with quickening force the growth of the present from the past. It is done every day. But, everyday, too, children leave school without any further desire to open a history book and sadly lacking in the ability to interpret the events recorded in the daily newspaper. Teachers, inexpert in history teaching, confess that through some good broadcast lessons not only has the interest of the pupils been aroused, but their own enthusiasm has been stimulated, aims of teaching have become clarified, and methods of approach indicated.

Thus the tendency is to raise the standard of history teaching and to emphasize historical imagination. The value of history broadcasts must be measured therefore by the degree to which they supplement and refresh the teacher's work, as well as their power for stimulating and instructing the pupils.

The courses which teachers were unanimous in praising for their successful results were those of Miss Rhoda Power. Their success was tested by their power of interesting the children at the time single lessons were given and for the deep permanent impression they made. It was extremely interesting to examine the statements made by the teachers. One reports : " She has the gift of conjuring up visions by her choice of words, of firing the imagination by the timbre and cadences of her voice." Another accounts for her success by the fact that " Miss Power is always at the level of the child." Another : " By her unconventional methods and by the introduction of cries, etc., by asking questions, and seeking suggestions, as if she were teaching an actual class." And yet another : " Those (lessons) of Miss Power are very suitable from every point of view —matter interesting, presentation good, voice pleasant." The same reporter on being asked what were the qualities he looked for in the history broadcaster answered : " Must be able to present object in an interesting manner, must be able to get down to the children's level, must have a clear voice, and speak more slowly than is usual." The last point is an extremely interesting one which most teachers emphasized.

A group of teachers in training attended a demonstration broadcast lesson of Miss Power on "The Great Fire of London." Some of these had not, up to that time, listened to a broadcast lesson, and they were extremely impressed by the way in which the lesson came through. In a discussion they attributed its great success to the dramatic conception underlying it, by its concreteness, by its richness of appeal to auditory and visual imagery, by the lecturer's obvious knowledge of the pupils' imaginative level. The opening of the lesson was extraordinarily effective, gripping attention at the outset; atmosphere was created by the accumulation of concrete detail right up to the point when Hugh the Bellman appeared. From this point the lesson was entirely safe; a vivid and indelible impression had been produced on the minds of the children. The excellent combination of the dramatic with the narrative method gained and held the attention of the pupils, and minimized that effort of concentration on the voice of an unseen speaker which so often detracts from the effectiveness of an educational broadcast. Miss Power has obviously the gift of visualizing a historical episode, and can enable her listeners to visualize it vividly. She knew, also, how she was affecting her listeners. This knowledge gave confidence and brightness to her manner. The failure to visualize historical events, and those to whom the events are to be related is the real cause of deadness in many another broadcast history lesson.

The technique of history teaching by wireless has, however, only been hinted at, and many suggestions must be made for further trial and development.

An inquiry into the preparation made by teachers before the broadcast lesson did not yield very satisfactory results. The main difficulties in the way of adequate preparation seemed to be not lack of interest but, rather, the exigencies of the time table and the fact that history courses as organized and given over the wireless are not integral parts of the school syllabus. Whenever a school wishes to take a series of lessons the time table must be modified. The aim of the head teacher is to make the change as unobtrusive and as convenient as possible. This often militates against adequate preparation. But a time for preparing the pupils is essential even if it is used to give only the contents of the B.B.C. pamphlet and to show prints or pictures which would stimulate the imagination. In this connection teachers would welcome more explicit instructions and suggestions together with information where the lecturer obtained his material and from where illustrative material might

be easily got. That a slight preknowledge of the broadcast produces better results was the unanimous verdict of these teachers. The period of preparation is a matter of discretion for the teacher, but certainly nothing would be lost by documenting the talks in more detail than at present.

Some teachers advocate the issue of special readers to accompany these courses, but it is obvious that such a recommendation raises many problems. One big difficulty is the variety of syllabuses in elementary schools. Only those privileged with an intimate knowledge know how diverse syllabuses can be even between schools in the same area. It would be difficult and, indeed, undesirable, to make them uniform, because a teacher will best teach what he is interested in, and scope must be left to individual initiative But there is a great deal of difference between rigid uniformity and anarchy. It is surely possible to work out in history a scheme which would be suitable for the majority of children between 11 and 14. If that could be done, it would be possible to broadcast talks which would be suitable to the majority of schools. The teacher could break in on his own lessons to receive broadcasts which would be of special interest or benefit to his class, or, perhaps, lessons on topics which he feels he could not adequately present himself. This form of co-operation could be both stimulating and profitable. There is little danger that the keen teacher will be prepared to give up entirely the history teaching in his class in favour of wireless. Teachers realize the educational value, the psychological necessity for continual personal inter-action with the taught.

The teacher is indispensable. Broadcast lessons can merely be a supplement to the usual work.

The teacher knows that after the broadcast lesson the interest gained must be directed, the knowledge consolidated, misconceptions must be discovered and corrected. Only by personal contact can this be done. The teacher who allows a talk to be received and then dismisses the subject and class has shirked his duty. It is his task to find out how the pupils have reacted and whether their ideas are hazy or clear. He must, therefore, question precisely and analyse answers carefully. The methods which teachers have adopted vary. Some schools make a practice of written compositions, and this practice is occasionally fostered by the broadcast teachers, who offer prizes for the best efforts submitted. To do these compositions well it is desirable that children should take notes. This is not easy to the average child, for concentration in listening is lessened considerably by the effort to take consecutive notes. Moreover, the pace of the

lecturer would require to be much slower. Some teachers make occasional remarks in explanation or illustration at suitable pauses, or emphasize points by writing on the blackboard notes which the children may use in writing their own compositions later. The question whether pupils should be allowed or encouraged to write notes is a difficult one to decide, and must again be left to the teacher. In some classes, it is clear, the children fail to follow owing to the distraction, and they lose the impression of the lesson. But in one private school at which I observed lessons being taken, the facility and accuracy with which boys of twelve and thirteen took notes was impressive. The boys had benefited in their power of composition by the requirement that these notes should be expanded into full essay form. The Principal was emphatic that not only had their fluency been improved, but that they had been stimulated to use reference books and to read historical novels in their search for further material. An examination of the essay books would be sufficient to convince any observer that systematic practice of this kind leads to great improvement. In that school the formal composition lessons have been abandoned. It is important, however, to remember that the groups were small, with a very free atmosphere, and that individual attention was much easier than would be possible in an elementary school class of forty or fifty pupils. Other teachers claimed that as a result of broadcast talks children had turned out compositions far above their average performances. Others could not distinguish any real difference caused by broadcast lessons, claiming that children would naturally write more fluently about things that interested and moved them, irrespective of the fact whether that interest was created by the teacher or by the wireless. It would be extremely interesting to have more precise expressions of opinion of a large body of teachers on this point, as the claims made are many and diverse.

There is fairly general agreement that on days of national celebration broadcast lessons or services can be great agents in impressing on the minds of school children the richness of the heritage bequeathed to them.

In the "Spiritual Foundations of Reconstruction," published some years ago, Dr. Hayward has shown how an appreciation of great events may be fostered in an assembled school on special occasions by an appeal based on simple auditory elements. There is a strong emotional character about these celebrations which is very impressive. That emotional character could be still heightened if the children realized that they were listening to and taking

part in a celebration which was being shared by hundreds of thousands of other children all over the country. Such an emotional tone and suggestible condition could in the hands of wise teachers be directed to the formation of a sound patriotism and the development of the historical sense. The B.B.C. have already set a high standard on some occasions. Teachers mention the unforgettable impressions of the children on the occasion of the Armistice Services. A wise extension of this form of broadcast, whether of an actual service or an arranged celebration, must lead to a fuller understanding and insight into the nation's history. Hayward and Freeman's " Books of School Celebrations " offer many suggestions which might be developed. Some schools cannot afford the time and distraction of preparing their own celebrations, valuable as such preparation must inevitably be. There are few schools, however, which on occasions of this kind would not be prepared to profit by listening-in, realizing that they were participators in a great national celebration.

Another interesting point for discussion is raised by the broadcasting of historical plays or scenes. In the classroom there has been a marked increase in the dramatization of historical events. This has made for greater reality in history teaching to children. Some form of dramatic representation is now considered desirable by the keen teacher for the realization of history by the pupils. Seeing, indeed, being the actors, " sensing " the scene are stimuli for the working of the imagination and the recreation of the spirit and atmosphere of the episodes which are being represented. The results of this method are entirely attractive, and generally excellent. Can the same results be obtained when the representation is given from the studio and not in the classroom, by agents and not by fellow-pupils? Can the dramatic sense and appropriate values be transmitted to any great extent when the children cannot see the actors, cannot be the characters?

Shakespearean scenes have been given, but teachers are not loud in their praise, and honestly think that much was lost. They are inclined to think that simpler dialogue specially created for the historical period would be of far greater value and interest.

It is not the purpose of this note to raise all the problems connected with the broadcasting of the history lesson or to put forward any definite conclusions. It is rather desired that some points which interested a group of teachers should be brought to the notice of other teachers or persons interested in teaching, so as to stimulate further discussion about many problems connected with the value and technique of broadcasting.

The Biological Interests of Young Children.

PART I.

BY SUSAN ISAACS.

I.—GENERAL ASPECTS OF THE PROBLEM.
II.—RECORDS OF EXPERIENCES OF A GROUP OF YOUNG CHILDREN (at the Malting House School, Cambridge).

I.—GENERAL ASPECTS OF THE PROBLEM.

THE interest in pets and plants of children of kindergarten and infant-school age has long been recognized, and needs no demonstration. Yet these early pleasures and curiosities of little children, catered for in every well-conducted infant school, have not been satisfactorily carried forward in the following years, nor well linked up with later biological interests—even where these latter, indeed, receive any serious notice.

This is without doubt due to a number of influences, including all those circumstantial and historical ones which have until now left the years between the infant school and the senior grades high and dry and barren in the middle of the flow of educational advancement. But perhaps it is also due to faulty psychology, a lack of any clear perception of the nature of these interests in the early years, which has prevented our seeing their full value as a cumulative educational medium. We romanticize and sentimentalize our children's attitude to plants and animals, and need not then be surprised if this leads to their interest being dissipated and lost.

During recent years some general attention has been given to biological teaching for children, owing to the growing demand for some form of "sex information," which, it is commonly and rightly felt, should be based on a broad biological approach.

The years usually considered relevant to this, however, are the early adolescent or pre-pubertal years—anything, say, from ten onwards. So that this, again, would leave an unfruitful gap between the care of kindergarten pets and plants and the later, more definite studies of botany and zoology.

The view here presented, based upon the observations recorded, is that an active, continuous, and cumulative interest in animal and plant life—but particularly animal—develops easily and uninterruptedly out of the little child's first impulses of curiosity and pleasure in these things, *given certain conditions.*

These conditions are :

(A) That we free *ourselves* from prejudice and inadequate thinking as to
  (1) The order in which plant and animal life should be dealt with ; and
  (2) The fields of fact which are acceptable to the little child, and educationally valuable.

(B) That we follow the child's actual direction of interest, and day-to-day questionings, and provide the situations and the material which will answer his questions, and stimulate his interest still further.

Consider first, A1, the question of whether we should try to start the study of biology through plants or animals. General opinion has inclined to favour the virtues of plants, but the grounds for this view are rarely set out. Professor G. H. Thomson, for instance, writing in 1924, in " Instinct, Intelligence, and Character," on sex education, says (page 160) : " Giving such knowledge (through the botanical approach) as makes sex seem natural . . . " but gives no hint as to why he takes " the botanical approach " thus for granted. One wants to know what the supposed grounds are. Is it held that children are natively more interested in plants than in animals ? Or that the study of plants has a greater intellectual value ? That it yields a more important range of facts—more important either in themselves or in relation to the biological problems affecting human life ? Are the sexual processes in plants assumed to throw more light upon human sexual physiology ? Or is the preference due to a conflict of fear and embarrassment with intelligence in ourselves ? Do we favour the study of plants just *because* it is more remote from the facts of human sexual relations, and we are afraid to make more than a half-concession to our conviction of the child's need for knowledge and understanding ?

The observations recorded below very strongly suggest :

(*a*) That children of the ages covered (4-10) are on the whole more actively and spontaneously interested in animals than in plants ; and

(*b*) That the facts of the life-cycle in animals are far more easily and directly perceived and understood by the child ;

(*c*) That the interest in animals is far more genuinely biological, plants being often little more than gifts and decorations ; and

(*d*) That this interest is therefore more easily sustained and articulated, and ramifies more naturally into cumulative knowledge and settled pursuits.

The detailed psychology of the recorded observations on which these views are based is discussed in a later paragraph.

(A2) Opinion has been, if anything, still more rigid as to the fields of fact in which the young child shall be allowed to interest himself, within the study of animals. He has been encouraged to watch their behaviour, to care tenderly and protectively for them, and sometimes even to breed them ; but it has not been considered desirable that he should take any interest in (*a*) the facts of internal structure and physiology—particularly if this involves any reference to the processes of digestion, excretion, reproduction, etc., in humans; and (*b*) the facts of death. If with somewhat older children (ten years or more) it is desired to give them some knowledge of physiology then this must be done through text-books or diagrams—but never by direct investigation of the bodies of dead animals, in dissection. And such a thing is completely out of the question for young children. So strong is this widely held attitude that it is difficult to get many people even to consider the possible wisdom of the opposite course—they are too disturbed by the mere suggestion to be able to give it any attention.

Perhaps they fear that to " look inside " dead bodies will either shock or frighten the children, or will encourage them to cruelty with living animals. But when one assures them from one's own experience that the majority of little children are neither shocked nor frightened, nor made cruel by these ways of study, the solid wall of prejudice does not melt away, and one is in the end left with the suspicion that the real attitude is " Well, if they're *not* shocked or frightened, they ought to be ! "

Such an uncompromising attitude about what the feelings and behaviour of young children should be is, however, not easy to maintain after one has reflected a little on the extraordinarily confused and conflicting ways in which we adults actually behave towards animals, in the sight of children. What children make of our injunctions to be " kind," and our horror at any impulse of cruelty on their part, in the face of our own deeds, and the everyday facts of animal death for our uses and pleasures, would be hard to say. There is probably no moral field in which the child sees so many puzzling inconsistencies as here.

Let us try to sort out the varying standards and ways of grown-up behaviour with which any child in an ordinary environment is bound to come into contact, in varying degrees.

(1) We (the majority of us) eat dead animals, and the child early realizes that the " meat " given to him on the table comes from the bodies of animals killed for the purpose, and sees these displayed in the butchers' shops—whole animals, pigs, sheep, fowl, rabbits, fish, etc., as well as the politer joints.

(2) We kill for our own safety, as the child soon learns from our stories of fierce animals—lions, bears, and so on ; or as he sees us do, on any summer day when the wasps come round the jam.

(3) We kill animals which are a nuisance to us—the slugs which eat our lettuces (any child of a gardening father may be asked to help collect slugs and put them into salt water), the rooks and pigeons which are supposed to harm our crops, the weasels and stoats which prey upon our game, the rats which invade our hen-roost ; and the vermin which may encroach upon our household or our person—fleas, cockroaches, mice. The child may even be encouraged by scientific evidence to " kill that fly." We kill also the superfluous young of our own pets, cats and dogs—simply because we do not want them.

(4) We (many of us, even some of those who teach children to be " kind ") kill for sport. The child meets or hears of the fox or stag-hunter, the wild-fowler, the angler, the big-game hunter (a great hero). Some parents will express disapproval of some of these sports—the stag chase or wild-fowling perhaps—but few will have any protest to make about fishing.

(5) Many mothers clothe themselves in the skins of dead animals, fur coats, etc., and we all make use of their skins in boots, bags, and other leather articles.

(6) We keep, as loved pets, animals which are themselves " cruel "—the cat which not only kills but tortures mice, the terrier which is " a good ratter." We speak in admiration of the song and parental care of, for example, the insect and worm-eating birds ; and the strength and skill of the carnivorous mammals. Nor can we do other—but how confusing for the child to whom our only direct teaching is, " You mustn't be cruel ! Be kind and gentle ! "

(7) We communicate to our children curious phobias about particular creatures—spiders, mice, snakes, all " creepy and crawly " things ; and will often kill them just because they are distasteful.

(8) Some of us kill for collecting purposes. Young children are often taught how to catch, kill, and " set " moths and butterflies, by otherwise humane parents and elders.

Many years ago Sully was able to show how these contradictions do in fact trouble little children. In the " Extracts from a Father's Diary," given in " Studies of Childhood " (1903 edition), the following incidents occur.

Page 460 (age 3.6½). " He was at this time, like other children, much troubled about the killing of animals for food. Again and again he would ask with something of fierce impatience in his voice : ' Why do people kill them ? ' On one occasion he had plied his mother with these questionings. He then contended that people who eat meat must like animals to be killed. Finally, to clench the matter he turned on his mother and asked : ' Do you like them to be killed ? ' "

Again at 3.11, on the mother expressing dislike of a caterpillar : " Why don't you like caterpillars ? " The mother answers playfully, " Because they make the butterflies." The boy asked " Why don't you like butterflies ? " The parents laughed, the boy then thoughtfully saying, " Caterpillars don't make a noise." (The parents disliked noise-producing animals.)

Page 475 (age 4.4). Looking at a picture book of animals, and *à propos* of a picture of some seals :

C. : " What are seals killed for, Mamma ? " M. : " For the sake of their skins and oil."

C. (turning to a picture of a stag) : " Why do they kill the stags ? They don't want their skins, do they ? " M. : " No, they kill them because they like to chase them."

C. : " Why don't policemen stop them ? " M. : " They can't do that, because people are allowed to kill them."

C. (loudly and passionately) : "Allowed, allowed ? People are not allowed to take other people and kill them." M. : " People think there is a difference between killing men and killing animals."

C. was not to be pacified this way. He looked woe-begone, and said to his mother piteously, " You don't understand me."

Besides these modes of behaviour, which are in direct or indirect contradiction to our explicit teaching, and to our responses to any cruelty on the part of children themselves, there appear to be the following very disparate general attitudes among adults :

(9) The poetic, merging into the sentimental, in which we write poems about the skylark and robin redbreast.

(10) Utilitarian keeping and breeding—cows, horses, etc.

(11) Pet-keeping, either for the pleasures of companionship or possession.

(12) The non-interfering study of birds and animals, as in modern "bird-watching"; most children meet some intelligent people who have this outlook on the animal world to a greater or less degree.

(13) Experimental study, on the living or dead animal, in anatomical and physiological research.

Not all these various trends in our dealings with animals will come the way of every child, or at the same time, or with equal emphasis; but he is bound to meet most of them in influential form, even in his young years; and, in the majority of cases, discovers them existing side by side in his own parents—cheek by jowl with their commandments to him. The case would be comparatively simple for the child of parents who were entirely consistent in their sentiments and conduct towards animals—for example, the extreme vegetarian, who refused to exploit animals for any human purpose whatever—food, dress, comfort. But it needs no Samuel Butler to point out the impossible dilemmas in which such a would-be consistent would quickly find himself—how, for instance, would he supply his table with rice if he refused to let someone else guard the rice plantation from trampling animals, or with green vegetables, if he refused to have the rabbits snared, or the slugs destroyed? And, in any case, whilst this might make the moral atmosphere a little less bewildering for the small child, as long as he remained within his own doors, it would cut him off in the most unhealthy way from the common ethos of his time.

The solution for the educator must lie rather in a more balanced and positive attitude to the various psychological tendencies and external necessities which lie behind these confusions and contradictions. Is it possible to arrive at a reasonably consistent set of standards for the demands we make on children, one that will be both more honest and more intelligible to them, and more easily maintained against real necessity? One, moreover, that will yield a more satisfactory psychological solution for their own internal conflicts?

For the problem is still further complicated by the contradictory impulses of the child himself. The great majority of little children resemble their parents in being compact of both tenderness and cruelty, of the impulse to cherish alongside the desire to master and hurt. We can see this in any group of small children left free with small animals, or digging in the garden for worms. Sometimes one

impulse has the upper hand, sometimes the other ; but few (if any) children fail to give some sign at one time or other, in one way or other, of both these aims.

Our problem is, then, here as elsewhere, to make a positive educational use of the child's impulses, so that they shall be fertile in skill and imaginative understanding, and lead out of themselves to the world of objective knowledge and common human purpose.

It seems possible to maintain, in ourselves and our children, the demand that no living animals with which we have any contact or for which we are responsible, shall be allowed any avoidable pain or suffering. We can refuse to let children tease or hurt, or make suffer by neglect, any animals with which they have to do, and we can easily keep to this standard in our own behaviour.

But external necessity, no less than psychological need, shows at once that the mere negative demand is not enough. It may happen that we have to put a suffering animal out of its pain, or destroy a family of kittens or mice so that we may not be over-run. If we have induced in our children such a sensitive horror of the facts of pain or death, by our teaching about cruelty, that they cannot kill an injured bird, or a rabbit caught in a trap alive but mutilated—or that they prefer to leave the unwanted kittens to drown slowly and painfully by themselves rather than stay to make sure that they are quite deprived of air—then we have over-shot the mark, and defeated our ostensible aim. The truly humane person is made of stern stuff on occasion. What could be more admirable than the courage and decision of the little girl of $5\frac{1}{2}$ years, who, distressed by the sight of a cat playing with a live mouse, ran to get a chopper, seized the furious cat firmly by the scruff of the neck, killed the mouse with a blow of the chopper, and flung the cat down again, saying, " There ! You can have it now ! "*

We have, then, to let our children face—when it comes their way—the fact of animal death, as a fact of nature as well as of the necessities of human sustenance. There is, of course, no need to go out of our way to introduce them to it, or to focus their attention upon it. No child can keep pet animals, or move about in a garden or the country-side, or, as we have seen, in the streets of the town, without coming up against it. What it amounts to is that if when they meet it, our children show an intelligent interest in a dead body, and the possible causes of the death, there is no moral or intellectual ground for turning their gaze away from it, or failing

* I am indebted for the incident to Mr. S. F. J. Philpott.

to use it for the purpose of enlivening their understanding of the processes of life, and the imaginative sympathy that goes with understanding.

All this would fall away, it is fully admitted, if the sight or handling or investigation of a dead pet animal did shock or frighten children, or disturb them deeply. So far as experience goes, however, there is every reason to think this is not so, apart from exceptional cases (although of course one looks for the possibility of limiting conditions and ages).

Again, so far from increasing the impulses to cruelty in children the effect seems to be the very reverse. The children observed showed greater sympathy with the living animals, and more consistent care, after they had " looked inside " the dead ones, and fewer lapses into experimental cruelty.

In other words, the impulse to master and destroy was taken up into the aim of understanding. The living animal became much less an object of power and possession, and much more an independent creature to be learnt about, watched, and known for its own sake. The children's minds turned more freely and steadily towards the non-interfering, observational attitude of many modern naturalists towards living animals in their own setting (bird-watchers, big-game observers, and photographers, whose work has won an important place for itself in the world of biological science to-day). Our constructive method of (*a*) welcoming any interest shown by the children in the processes of life—in eating, digesting, excreting, breathing, the beating of the heart, running and walking, being ill and dying, etc., among their pet animals ; (*b*) of " looking inside " those animals which died, in order to find out more about these processes ; and (*c*) following up any references offered by the children to the human body, did actually achieve a steadily humane outlook, and enliven the children's sense of responsibility towards their pets and towards animals in general.

The method thus becomes an active influence in the building up of a positive morality of behaviour towards animals, going beyond the mere negative standard of not being unkind to them, and expressed in an eager and intelligent interest in their life-histories, and a lively sympathy with their doings and happenings.

(B) All this, however (the " bird-watching " as well as the " looking inside ") would not be so fruitful if it did not spring out of the movements of the young child's own mind, and if it were not kept in close touch with these. There is no room here for any educational pedantry of regular " lessons," of systematic questioning

or statement-making by adults, or any sort of formal air of learning. *We* may cast our theoretical statement as to what the children gain from their activities into such words as " cumulative and articulated knowledge," " settled pursuits," and the like ; but to the children themselves, the whole thing was (and must be allowed to be) just a simple following up of their pleasure in watching and playing with their pets, feeding and caring for them, noting the day-to-day changes of their lives—birth, growth, and death, talking freely about these things, and raising their questions as to how and why and wherefore, as children will when left free to do so. Our part was to meet these questions when they arose, never to turn away from any of them on merely sentimental or quasi-moral grounds, to give the children the wherewithal to work out their questionings to practical answers, to supply any further information which the children needed and could not obtain directly, and thus to provide a positive stimulus towards the further development of a sustained interest in all the ways of animal life.

The whole of the investigations recorded here arose out of the everyday events in the histories of the animals kept in school, or of live or dead animals seen in the streets or the countryside, and in spontaneous conversations about these—(very often meal-table talk). (Where this way of starting from their spontaneous interests is not actually shown in the details of the records, it can nevertheless be taken as invariably true, and as a central point of the general method of the school.)*

There was, in fact, much in common between our method, and that used in his village school by Mr. Clayton with older children, capable of rather more sustained and systematic inquiry. " The owl was in disgrace. The keeper declared that it killed his young pheasants and ' my lord ' had given the order for its extinction. Could the school do anything to save the race in the district ? An appeal to his lordship on the score that the owl was a useful member of the bird community had been met with the rejoinder, ' Prove your statement and the birds shall be spared.' We secured an armistice, and then we set about it. The course we decided on was most interesting but decidedly smelly. Owl casts were collected from the abodes of six pairs of owls at different intervals. By repeatedly washing these in boiling water they were thoroughly cleansed and disintegrated. An abundance of fur from mole and vole and mouse and rat was secured, but neither feather nor bone of bird was

* Compare my paper on " The Function of the School for the Young Child." Forum of Education, Vol. V, No. 2, June, 1927.

discovered. The seniors were so proud of this experiment that they arranged the fur and bones in an artistic manner on a sheet of cardboard, and, having framed it in a glazed box, added it to our permanent wall decoration. His lordship was invited to inspect this case and read some of the notes in connection with the work. We heard later that he had issued an order that any keeper who trapped or shot an owl was to be at once discharged." (William Clayton, " The Village School, What it can Do," in *The Schoolmaster*, September 17th, 24th, and October 8th, 1926.) (Quoted by Professor Findlay in " The Foundations of Education.")

Let us now consider briefly what may be the particular values of animal and plant life respectively to young children—as suggested by the records given below, and by ordinary experience.

Flowers and flowering plants in the garden, as we know well, attract even the very young child's attention by their bright colours and pleasant smells, and these remain a permanent source of interest and keen pleasure. The bright colours and varying shapes give rise to their use as *gifts* and as *decorations*, and these two seem to be the most significant and spontaneous ways of regarding flowers which young children show. Occasionally the different forms or ways of growth evoke a mild interest for their own sakes, but this is fleeting and sporadic in these early years unless more or less compulsorily turned into a " subject " by adults.*

A more active and enquiring interest is called out when some easily noticed change occurs—such as the quick germination and growth of cress seeds, the bursting of flower or leaf buds, the sudden appearance of the green shoots of bulbs from the bare earth. But apart from these occasional experiences, the general slow tempo of vegetable life, and the lack of movement and sound, means that there is here far less either to arrest the immediate interest of the young child, or to evoke any effort of active inquiry, than in the case of the world of animals.

One must not, of course, underrate the delights and educational values of gardening, and of the experience of seasonal changes which

* Apropos of the " subject " of Nature Study, it may be worth while to note here a remark made by " Jane," the ten-year-old girl who appears in the records in 1926-1927. Jane was a visitor to the school for one year, owing to illness in her own home in a provincial town, where she attended a well-known school for girls, and had a very creditable school record. (Her mental ratio was 143.) It will be seen from the records how eager and sustained was her interest in the living animals, the dissections, the human skeleton, and anatomical diagrams. She had some considerable knowledge of birds and bird-life, too, gathered in her country walks. I was with her when she saw her first kingfisher, and remember the keen delight she showed. Yet one day she was overheard telling the other children about the things she did in her own school, and saying : " And we do ' Nature Study,' but I *hate* it—it's always so dull ! "

it brings. Digging and watering have an immediate and never-failing appeal to quite young children, and for those rather older, the pleasure of gathering the fruit of one's own labour in the garden is very great. As the summarized records point out, we made as much use as possible of all gardening activities throughout the year.

Our pleading here is not that we should let plant-life and gardening go in favour of animal biology—but that we should give the latter its own important place, and cease to exclude or cripple it by a false psychology and pseudo-morality.

For the child's interest in animals is far more lively and sustained, and needs less support and stimulus from us. It should, indeed, surprise us if this were not so. The movements and constantly changing behaviour, the warm touch, the voice, *the responses of the animal to the child's own behaviour*, call out not only an interest in things happening, but a feeling of companionship, an immediate sympathy, which makes the relationship at once active and mutual. Plants and flowers are, as it were, mere instruments of passive pleasure ; animals are active and adaptive creatures, which the child finds he can act upon or be moved by, much as in the case of human beings. Hence he shows a variety of attitudes towards them, according to the kind of animal, or his own changing moods and phases of development. The small animal, for instance, becomes to him a living toy, which he can tyrannize over, or cherish. The large animals (a big dog), those strange or fierce (the spider, the Zoo lion or tiger), those more independent of human will (the birds), demand understanding through their very strangeness and fearsomeness. Moreover, all of them get taken up into the drama of the child's fantasy life, in one way or another (as the records show). There is everything here to call out his interest in their behaviour and ways of life.

The changes occurring in animal life, moreover, are much more easily seen and grasped than those in plants—feeding and drinking, breathing and sleeping, the processes of excretion, the changes of growth. Or the life-cycle of birth, growth, and death—even a young child can grasp much of what is happening, with scarcely any comment from an adult, if he keeps a pair of mice, presently finds a family of young, sees these feeding from the mother and watches them grow up and become parents in their turn. The whole thing happens within the span of his power of observation and memory—and is of an order and a scale which he can see and understand directly.

It is, I think, these two factors which make the study of animal life develop more easily into cumulative knowledge and sustained

pursuits than that of vegetable life, viz., the empathy which the young child feels with the living, moving, responsive animal, as the starting point of interest ; and the comparative ease with which the major facts in their life processes and life cycle can be directly observed, as the main condition. The facts connect up more easily for him, the links are more apparent ; and he has his own physiological experiences and his own impulses, to give them life and reality.

How far less easily seen and understood are the relationships of plants to the soil and the air, or the cycle of plant life ! It is surely only possible to advocate the teaching of the " nature study " of plants before that of animals, of botany before zoology, if we temporarily lose sight of all our general psychology and pedagogy of interest and of the learning processes.

BIOLOGICAL INTERESTS.

DIARY.

To help the reader to relate the material of the diary to the various psychological arguments offered above, and for the sake of reference, the following purely *ad hoc* rubrics have been introduced, the appropriate one being given (*in italics*) at the end of each incident : Active interest (curiosity and attitude of inquiry) ; practical interest ; reasoning ; fantasy and identification ; flowers as gifts and as decorations ; tenderness ; cruelty ; death.

A.—Gardening and Interest in Flowers.

The garden was the general background of the school life, everything that could possibly be done out of doors being carried on there. Most of the children helped in the general care of the garden—brushing up and carting leaves, weeding, burning rubbish, cutting the grass and making hay, trimming the rose-hedge, and so on. Each child had his own plot, and cared for it according to his ability for sustained effort—digging, planting bulbs, sowing seeds, gathering the flowers to decorate the schoolroom or to give to a friend. There were a number of fruit trees, and the children gathered blossom, or climbed the trees for the fruit, as the seasons came and went.

The children quoted, and their ages in October, 1924, are : Frank (5.0), Tommy (2.8), Dan (3.5), Harold (4.9), George (4.2), Christopher (4.1).

The figures given at the beginning of each note indicate the day and month of the note—in 1925, and later 1926.

The notes are full of such entries as :

24.2. A day or two ago I had sown some mustard seeds on flannel, and to-day F. noticed that they were growing. All the children looked at them. *Active interest.*

3.3. T. spent some time carrying round and touching the mustard plants, which had now grown tall.

11.3. F. asked Miss X. to pick a spray of pink blossom for him, and then ran about the garden with it as " an express wedding train." *Fantasy.*

17.3. F. had sown some fresh mustard seeds a few days ago, and all the children interested themselves this morning, very eagerly, in the green shoots, talking about the rate of growth, etc. *Active interest.*

19.3. F. looked at the mustard seeds, and talked of " the way they're growing." " The leaves must have been inside the seeds," he said. *Active interest.*

22.4. H. talked to the other boys about whether I had brought the promised seeds, and then came to ask me. When I said " Yes," there were shouts of pleasure, and questions as to what sort I had brought. I gave each boy some nasturtium, onion, and pea seeds. H. said, " We'll have to put sticks beside the peas." They all dug their gardens and planted the seeds, G. showing the most patience and intelligence in his methods, but all being very interested and careful. *Active and practical interest.*

24.4. H. gathered a large bunch of flowers from the garden, and put them into water, to take home to his mother at the end of the day. *Flowers as gifts.*

15.5. The children, on my suggestion, gathered one of each different kind of flower in the garden, and we compared and named them. They went over the names two or three times. *Active interest.*

12.6. The children gathered and cooked sticks of rhubarb. *Practical interest.*

18.6. C. asked me to pluck a rose for him and said, " I'll give it to Dan, and then he'll come to tea with me." *Flowers as gifts.*

15.10. C. gathered leaves, and brought them to me to show me the veins and the hairs on the leaves, with delicate observation. *Active interest.*

29.10. The children decorated the schoolroom with long pieces of virginia creeper. *Flowers as decorations.*

30.11. A few days earlier we had put some dried beans and peas to soak in water. F. went to look at these to-day, and remarked that they had " bulged." The other children joined him, and, on my suggestion, tried to take the skins off, seeing how easily they came off, how soft the soaked peas and beans were, and that, when the skins were taken off, the inside came into two separate parts. *Active interest.*

1926.

Children quoted, in addition to above, with ages in October, 1925 : Priscilla (6.2), Jessica (3.0), Phineas (2.8), Lena (2.10).

19.4. A few days ago we had gathered apple, pear, and cherry blossom, and D. had told us that someone had said to him that " if we plucked the blossom the apples would not grow." To-day he went to look at the trees to see if the apples were there yet. *Active interest.*

22.4. Some of the children having asked, " Why can't we grow our own potatoes ? " we agreed to do so, and have been digging two large beds in

preparation. To-day we planted these beds—P., D., J., and Pr. joining in this. I dug the deep trenches, and the children brought the potatoes in pails, put them at the bottom of the trench, and covered them over.

Active interest.

26.4. A few days ago we had sown some cress seeds and peas, and the children remarked to-day, " The roots are growing down from the seed."

Active interest.

23.6. J. spontaneously remarked on a yellow patch on the lawn where a table had been upturned and left for some time. *Active interest.*

1927.

7.2. Ph. and L. looked at the growing mustard and cress, and were surprised to see how much they had grown. Ph. asked " What are they called ? What makes them grow ? Does the water ? " *Active interest.*

8.3. Ph. went to look at his garden, and found the mauve crocus which he had planted last week ; he showed it to Miss Y., saying " It's come out—that's because I made it some nice pudding." *Fantasy.* He wanted to plant more bulbs, and went to the rubbish heap to look for more. There were two crocuses open, and he began to dig them up. The stems broke, and they came up without the bulbs. Ph. said, " Are they broken ? " and L. told him " Yes, because there aren't any bulbs." Later, when she was trying to dig one up in her plot, she also broke it, and asked whether it would grow. Miss Y. said, " Do you think it will ? " and Lena replied, " I don't think so, because it hasn't any bulb." Later Ph. dug up one complete with the bulb, and shouted " There's the root—that one will grow." He planted it in his own plot. *Reasoning.*

B.—Interest in Animals.

Children quoted, and ages in October, 1924: Frank (5.0), Tommy (2.8), Dan (3.5), Harold (4.9), George (4.2), Christopher (4.1), Theobald (4.8), Duncan (6.4), Paul (3.7), Priscilla (5.2).

Autumn Term, 1924.

24.11. In the garden the children found a small dead rat, and spoke of it as a " mouse." They said, " It's dead," and ran about holding it. I took it away for fear of infection. D. said, " You won't hurt it, will you ? " I took it to the other end of the garden, and hid it. D. asked me, " Where have you put it—you've not hurt it, have you ? " *Tenderness and death.*

3.12. As on one or two other days, a cock from the next-door garden has come over the wall, and H. and F. chased it about rather excitedly until I intervened. (H.'s mother reports that on going home he told her, " We chased a cock to-day, and killed it.") (!) *Cruelty and fantasy.*

Spring Term, 1925.

16.2. Another dead rat was found in the garden ; the children looked at it, and talked about it very interestedly. They helped me to bury it.

Death.

Some of the children chased a cat which came into the garden. In digging, F. found a worm, and he and D. cut it into pieces with the spade and stamped on it. P. remarked "It's dead now." T. carried a worm about for a long time—he has no impulse to hurt them. *Tenderness, death, and cruelty.*

18.3. A small black cat came into the garden—the children saw it and rushed to pick it up. They were all fairly gentle with it, and affectionate, taking turns to hug it and carry it about. It got squeezed rather hard, but there were no signs of intentional hurting it. Later on, however, when it came a second time, H. did seem to want to hurt it.

Tenderness and cruelty.

Summer Term, 1925.

21.4. H. and P. brought me some shells which they had gathered at the seaside during the holiday. They were very eager to talk about them, spreading them out, and telling me where they had gathered them. One of the other children suggested that we should put them into water, and we did so, in a large shallow bowl. During the next few days the shells were often looked at and talked about. The children noted the different shapes, naming them " snail shells," and " purse shells." H. spoke of the black mussel shells, which he said, " grew in a dirty place." P. spoke of one as " a little baby shell." The children opened some of the bivalves, saying " there'll be a fish inside." *Fantasy; active interest.*

Ch. and Dan finding worms showed great interest in them, calling me to come and look at them. *Active interest.* P. wanted to kill them as soon as he saw them,—and F. squashed some snails which P. found on a wall. *Cruelty.*

23.4. The children found a slug, and Th. said " Put it in water." They did so. *Active interest.*

27.4. We had prepared a hutch for a hen, and this afternoon the hen, and a sitting of eggs, arrived. The children were very interested. F., having fowls at home, already understood that the hen would hatch chicks out of the eggs, but the others did not. Dan asked whether they were " the same eggs as we eat ? " They watched the man make a nest with straw in the coop, and arrange the eggs, and put the hen on—and listened to his instructions about feeding, etc. In the following days, the children helped to put food and water for the hen, and often talked about the eggs. *Tenderness and Active interest.*

G. told us to-day how he had " been for a walk in a wood," and how he had " seen a real live snake from the Zoo—and Daddy hit it with his stick, and killed it, and put it in a ditch." *Cruelty and death.*

29.4. Pr. does not understand about the hatching of eggs, and asked to-day *why* we put the eggs under the hen. One of the others asked whether " the chicks will come out of the cock ? " (i.e., the hen). *Active interest.*

5.5. A rabbit had arrived during the week-end, and the children fed it to-day, and took turns at stroking it. *Tenderness.*

They found a wire-worm in the garden, and we compared it with an earthworm. The children modelled both kinds of worm later on. They had all noticed the feelers of the wireworm, but only F. had seen that it had legs. *Active interest.*

6.5. After we had fed the rabbit and the hen, the children felt the warmth of the eggs, and F. said he would like to see the inside of one. We cracked one into a cup, and the children saw the embryonic blood-vessels with great interest. *Active interest.*

8.5. The hen has deserted her eggs, and so the children each cracked one, to see what it was like inside. After talking about the blood-vessels which they could see, they stirred the egg up and said, " It's scrambled egg." *Active interest.*

11.5. Again they cracked some of the deserted eggs, and were able to pick out the embryo—the children saying, " It's a chicken." Then they beat the eggs up. T. put an empty egg-shell on the fire in a tin, saying, " I'm cooking an egg." *Active interest.*

H. found another dead rat in the garden. He and F. stamped on it, but Dan said, " Don't hurt it." H. then said, " Shall we bury it ? " and we all joined in doing so. F. asked, " Will that make it come alive again ? ' And another child said, " Does the rat not like it ? "

Cruelty, tenderness, and death.

13.5. H. found a woodlouse, which curled itself up into a ball, and we held it on our hands until it uncurled. They noted its many legs, its feelers, and the way it walked about. F. said, " Let's put it into water," and they put it into a bowl, then saying, " Let's find other animals to put into water." They collected several snails, a worm, and two " devil's coach-horses," and tried to pick up some small ants which they found. T. protested that " these things didn't live in water," and wanted to take them out. F. watched how the snails crawled up out of the water.

Active interest and tenderness.

14.5. F. brought a goldfish in a glass bowl to school, to keep there. He came running in, " Look what I have brought for the boys." The children discussed it and the amount of food it should have. F. said it should have " a pinch of ant's eggs, like a pinch of salt." Dan said, " Is it the goldfish that we eat ? I've eaten one." The others laughed at this. *Active interest.*

T. insisted on taking a worm out of water when the others put it in, saying, " They don't live in water—they don't *live* in water ! " *Tenderness.*

20.5. The children found a piece of sheep's jawbone with some teeth. They recognized that they were teeth, but did not know the animal. Du. said, " Perhaps it's a horse, and perhaps a tiger. I've seen a tiger's bones in Cambridge, with all the flesh off." F. ran into the schoolroom with the jawbone in his hand, saying, " they're tiger's teeth," and pretended to bite the others with them. *Active interest and identification.*

21.5. I asked Th. if he would help me lift the broody hen off her eggs. He did so, and then F., T., and Dan came too. They asked why I put a board to keep her off the eggs, and were very interested when I told them that she would not eat unless we kept her off the eggs for a time. After twenty minutes Th. came to help me remove the board, so that she could go back. The children fed the rabbit with dandelion leaves, and showed the animals to the visitors. *Tenderness and active interest.*

8.6. The chickens had hatched during the week-end, and there was great interest and excitement when the children saw them. They watched them at intervals throughout the morning, and were very anxious to make the hen get off so that they could see them. *Active interest.*

When later we went to feed the chickens, we found that one of them had died in the nest, probably having been trodden on by the hen. Dan saw this and at once said, " Oh, it's dead." He was very concerned, and took it to one of the maids to ask her to " put it in water to keep it."

Death, tenderness, and reasoning.

15.6. After bathing, Dan, F. and Du. ran about naked on all fours, as " doggies." *Fantasy and identification.*

16.6. As each day now, the children helped to feed the chickens and rabbit, and several times during the day to catch the chickens which escaped through the wires. They show practically no desire to hurt the chickens, but are gentle with them, and delight in holding them and stroking them.

Tenderness.

18.6. The children let the rabbit out to run about the garden for the first time, to their great delight. They followed him about, stroked him, and talked about his fur, his shape, and his ways. The rabbit sat still and let them stroke it, but when Ch. bent down to kiss it, it suddenly ran away, and they all laughed. F. was quite gentle with it.

Active interest and tenderness.

22.6. Du. overturned some of the large stones in the rockery, and the children found woodlice, both " the flat kind " and " the kind that rolls up." They picked some of each up, and compared them. Pr. would not let Dan go near them, saying, " Oh, don't—they're nasty—they'll bite."

Active interest and fear.

23.6. The puppy came into the garden, and the children carried him about and laughed at him when he ran. They were very delighted.

24.6. The puppy and the kitten came into the garden ; the latter hid among the bushes, and the children tried to catch it. When they got it, each child was eager to nurse it. They were quite gentle and friendly with it. They have the rabbit out each morning now, run after it gently, and take turns at holding and stroking it. *Tenderness.*

After lunch, Dan, Du., F., and Pr. played a family game, with the puppy as the " baby." *Fantasy and identification.*

26.6. The children played with the rabbits and puppy, and helped me clean and feed them. Later they again played with the puppy as " the baby." *Tenderness, fantasy, and identification.*

A few days ago the children had noticed the large yellow and green caterpillars on a mullein plant. To-day we gathered some, and put them in boxes. F. helped to make holes in the lids, and remarked that " they would die if we didn't do that." *Active interest and death.*

29.6. Th. returned after being away for some weeks. He was delighted with the rabbits and chickens, and spent a long time watching them, making affectionate and admiring remarks, and playing with them.

Tenderness and active interest.

H., F., and Du. threw the puppy into a bath of water, throwing it from some distance. They laughed when it looked wet and miserable. They protested a little when I said we should only have him in the garden on condition they did not do this, but soon accepted it. *Cruelty.*

8.7. The children looked at the caterpillars in the tin boxes, and noticed that those which had been put into boxes without any holes were dead. They gathered more caterpillars, and put them into boxes, with leaves. G. was very interested, and spoke of the size, colour, etc. One had begun to turn into a chrysalis, and the children said, " Oh, it's dead."

Death and active interest.

13.7. Some of the children called out that the rabbit was ill and dying. They found it in the summerhouse, hardly able to move. They were very sorry, and talked much about it. We shut it up in the hutch and gave it warm milk. Throughout the morning they kept looking at it ; they thought it was getting better, and said it was " not dying to-day." *Tenderness.*

14.7. The rabbit had died in the night. Dan found it and said, " It's dead—it's tummy does not move up and down now." P. said, " My daddy says that if we put it into water, it will get alive again." I said, " Shall we do so and see ? " We put it into a bath of water. Some of them said, " It *is* alive." Du. said, " If it floats, it's dead, and if it sinks, it's alive." It floated on the surface. One of them said, " It's alive, because it's moving." This was a circular movement, due to the currents in the water. I therefore put in a small stick, which also moved round and round, and they agreed that the stick was not alive. They then suggested that we should bury the rabbit, and all helped to dig a hole and bury it.

Death, active interest, and reasoning.

Late on, seeing the puppy lying on the grass in the sun, Du. called out, " Oh, the *puppy's* dead ! " All the children went to see it, and laughed heartily when the puppy got up and ran at them. *Fantasy.*

15.7. F. and Du. talked of digging the rabbit up—but F. said, " It's not there—it's gone up to the sky." They began to dig, but tired of it, and ran off to something else. Later they came back, and dug again. Du., however, said, " Don't bother—it's gone—it's up in the sky," and gave up digging. I therefore said, " Shall we see if it's there ? " and also dug. We found the rabbit, and they were very interested to see it still there. Du. said, " Shall we cut it's head off ? " We re-buried it. *Death and active interest.*

F. brought to the school a very small kitten, having talked for several days of the kittens at home. The children were delighted with it, and most charming to it. They all took turns at nursing it, carrying it to the house, and feeding it, all through the morning. They put it in a basket, and fed it with milk. *Tenderness.*

16.7. F. brought another small kitten. H. was specially affectionate to it, and spent half the morning nursing it. He called it a " dear little kitten," and kept stroking it. Then he made a " little house " for it in one corner of the garden, put the kitten in this, and sat by it. *Tenderness.*

End of Part I.

(Diary to be concluded in Part II.)

Mental Confusion in Arithmetic.

By Elsie Wardley Smith.

I.—WEAKNESS OF STUDENTS IN ARITHMETIC TESTS.

Much has been said and written about the weakness of Training College students in arithmetic; reports have been published about it, but despite all the discussions the weakness still continues. Because of its prevalence and its importance in those who are to be the future teachers of the subject the following investigation was made. The aim was to arrive at a better understanding of the problem and to find out the real nature of the students' difficulties.

In order to gauge the extent of the trouble, a test in the fundamental processes of arithmetic and in simple problems was given to eighty first year students. The questions were taken from Ballard's "Mental Tests" and comprised twenty questions in the ordinary mechanical manipulation of figures, and sixteen fundamental types of problem reduced to the simplest form. In both types of question the students' mean score was little higher than that of 14-year-olds as given by Ballard. This is partly accounted for by the students being out of practice, not having done arithmetic for two or more years, but in view of the very elementary nature of the questions and considering the amount of time spent on arithmetic in schools, it is surprising that better results were not obtained. The following examples indicate the extent to which errors occurred:

6	per cent.	were	unsuccessful	in	the	question 80,034— 1,996.
17	,,	,,	,,	,,	,,	£2 14s. 5½d. × 26.
12	,,	,,	,,	,,	,,	95,567 ÷53.
52	,,	,,	,,	,,	,,	15 tons 3 cwts 2 qrs. of coal at 25/6 per ton.
37	,,	,,	,,	,,	,,	Find value of £0.168.

A careful study of the mistakes made showed that they could be grouped into three types. In order of frequency of occurrence these were:

(1) A numerical inaccuracy (a careless slip) which did not interfere with the main course of the sum.

(2) An important misstatement, e.g., treating shillings as though they were pounds or *vice versa*; dividing by a number where multiplication was required; making a slip which resulted in an absurd answer and should have been detected at once.

(3) Making a series of incorrect statements ; losing the thread of the argument ; reducing the answer to a state of confusion and absurdity.

All these types of error appeared in the work of students who said : " I can do these questions but when I tried them in the test I became confused." This suggests that examination nerves might have been responsible for mental confusion and inability to do work which would have been easy under normal conditions.

To test this, at the beginning of an ordinary arithmetic class, the same students were told that as they had not done themselves justice in the arithmetic test (perhaps because of nervousness) they were to show what they could do under ordinary classroom conditions when there was no need to hurry or be anxious about results. Two questions almost identical with the test questions were given in this way on two successive days. In the case of one question the percentage of wrong answers was reduced from 30.8 under test conditions to 21.7 in classroom work. 8.3 per cent. exhibited considerable confusion even in the class work. Only 10 per cent. had the questions wrong in both test and class work. The other question gave similar results, the percentage of wrong answers being reduced from 44 (in test) to 31.3. Only 14.7 per cent. of the students had the question wrong in both test and class paper. It is evident that mental confusion still persists during classwork though not to such an extent as in examination tests, and that it is not confined to the same students all the time. Investigations in successive years and with groups of students from other Colleges produced similar results. In all their work the most striking feature was the large number of mistakes in questions of an elementary nature and the students' liability to fall into a condition of mental confusion when performing an easy but not well practised task.

II.—STUDENTS INTROSPECTIONS ABOUT MENTAL CONFUSION IN ARITHMETICAL WORK.

The matter was followed up and students' own introspections about it were obtained by a test given to 80 first year students. Six questions were chosen from among those that had been included in arithmetic tests for other students. These were hectographed and distributed face downwards.

(1) Find the cost of 239 yds. of cloth at $18/11\frac{3}{4}$ per yard.

(2) Find the value of $(206^2 - 169^2) \div 111$.

(3) Find the yearly interest on £958 19s. $10\frac{1}{2}$d. at $2\frac{1}{2}$ per cent. Answer to the nearest penny.

(4) (*a*) How many cubes of edge 5 mms. can be cut from a rectangular block of wood 4.7 cms. by 12.3 cms. by 3 cms? (*b*) How many such cubes could be cast from a bar of metal of the same size?

(5) Find $\frac{1}{15}$ of 19 sq. yds., 3 sq. ft., 9 sq. ins.

(6) Find cost of 15 tons 3 cwts. 2 qrs. at £1 5s. 6d. per ton.

The students were told that they were being asked to assist in a piece of investigation and that their papers might be anonymous. The following instructions were then given: "Begin with the first question; 15 minutes are allowed; do as many as you can in that time; use any method you choose; questions are easy, if you are out of practice you can easily find a way of doing them. Turn papers and begin." After the students had been working for 15 minutes they were stopped and told "Think about what has been going on in your minds during the last 15 minutes. Write down what you were thinking or feeling about the sums and say whether you did them easily or not. If there was anything in your mind tending to prevent accurate work write down what it was." Five minutes were allowed for this and then instructions continued: "Mental confusion frequently appears in arithmetic examinations and tests—not only in difficult questions but also in easy, straightforward ones. You have experienced it at some time or other in greater or lesser degree. It has been suggested that a scale could be made for grading the degree of confusion. Here is a suggested scale. (On blackboard.) If you can remember experiencing any of these while doing arithmetic at any time, try to tell what were the causes. Which stage fitted you while doing the questions at the beginning this morning? If you did not do your best what prevented you?"

Scale Suggested (on Board).

(1) Mind clear, able to concentrate and do its best.

(2) Mind somewhat below its best; less sure; less clear; slips may occur.

(3) Mind very liable to make slips; to lose line of argument.

(4) Extreme confusion of thought.

(5) Mental paralysis, words meaningless—no attempt possible.

Results in arithmetical questions were:

		Per cent.		Per cent.
Question 1	Correct,	72.5	Incorrect,	27.5
,, 2	,,	71.2	,,	26.0
,, 3	,,	36.0	,,	40.0
,, 4 (*b*)	,,	10.0	,,	23.8

19 students only did 2 questions; 27 students did 4 questions.

The students' own descriptions of their mental states were written before any suggestions had been made to them about what they might have experienced. What they wrote then agreed very closely with their later diagnosis, in terms of the scale. They were unanimous in their opinion that the condition of mental confusion could be distinguished, definitely, from that of inability to do a question. The results were, from students' statements :

Mental State	1	.....	25 per cent.
,,	,, 2	.....	26.3 ,,
,,	,, 3	.....	36.3 ,,
,,	,, 4	.....	5 ,,
,,	,, 5	.....	0 ,,

Judging from the work handed in there were 56 per cent. in mental states 1 and 2, and 44 per cent. in states 3 and 4. The agreement obtained here, supported by evidence from much more detailed investigation, establishes the idea that it is possible to use the scale suggested and to grade the mental states of an individual for degree of mental clearness. Also that it is possible to diagnose that state from a study of their written work in arithmetic. A difficulty arises in the fact that the mental state does not remain steady but is inclined to vary. The comments of students and the study of their work both showed that there were distinct fluctuations from question to question. Remarks like the following were common : " My mind was quite clear at first but became mixed up in question 3." " Sums were quite easy until big figures came into them, then I became confused." " When I got to question 3 I had confused thoughts about simple interest." The mental change is not always from clear to less clear, though this is the general tendency ; some students are confused in one question and not in the next ; some show confusion in alternate questions. Fluctuation between states 1 and 2 is very common : this may account for the prevalence of numerical slips.

In the last section of the inquiry, students were asked to give particulars of their own experiences of mental confusion while doing arithmetic at any time, and any ideas they had about the causes giving rise to it. While none of the replies were identical, certain factors were mentioned by a number of students. The most common are collected below with a number indicating how many included them as causes. These numbers are not of much value, for the time allowed was short and students might easily overlook causes which

affected them seriously. Most of them only gave one or two reasons. Almost all connected confusion with examination conditions rather than with class work.

(1) Obvious causes are physical unfitness (headaches, etc.) and nervousness—mentioned by 13 and 14 respectively.

(2) Being in a hurry; feeling that time is limited; feeling that one is not getting on quickly enough; is evidently one of the commonest causes. Forty-seven gave it, and in answering a more general question about the effects of examinations upon them, another group of students nearly all mentioned this point.

"There is no time to collect and arrange ideas. There is always the thought that if much time is spent on this the paper will be unfinished." (By a student whose work frequently shows confusion. Mental States 3 and 4).

"The thought that I must hurry makes me forget the simplest facts; I cannot think clearly." (Work frequently shows Mental State 4).

(3) The thought of its being an examination has a very disturbing effect on most women students; the extent of the agitation depending upon temperament and upon the ability of the student.

"Exams. turn my mind upside down. I get an idea of some point and then another comes up to contradict it, therefore I never think clearly." (A student whose mental state was frequently No. 3.)

"The thoughts that it is an exam. and that I must hurry keep continually coming to my mind and make me forget necessary things."

"Chief thought is will I pass or fail."

"In exam. I am not able to remember simple rules and tables without a great effort."

"In exams. all thoughts vanish for the first few minutes and then return gradually—more or less."

The effect varies for the same student—"There have been times when for several minutes I have been unable to do anything. My thoughts have been elsewhere, and I simply could not concentrate. Fortunately in Cambridge Local my mind was clear. I began with the first sum and worked steadily through without fear of slips or of having to do things twice to make sure. On other occasions I have sat at least two minutes asking myself: "Now are 2×9,

18? are they? are they? What is eighteen, etc.? What a funny word—eighteen—eighteen—eighteen."

"The thought that a great deal depends upon the result of an examination tends to upset one's train of thought."

"Fear of putting down the wrong thing."

"Sometimes mind becomes a blank on subjects I have given most study to."

(4) Meeting difficulties; imagining difficulties; discovering mistakes; are frequent sources of confusions (21).

"Very often a sum on reading seems to be easy, but on working it out it does not come out exactly, then confusion comes in, we think the sum is wrong, we work it again, perhaps making the same mistake—maybe a slip in calculation. We leave the sum and go on to the next one, but the mind is confused and will never return to that clear state by which it did the first sum so easily and neatly."

"My first sum is always the neatest and best done. Towards the end my mind coming against a sum I think I can do but which will not work out, becomes confused and cannot multiply and divide." "At the beginning my mind is clear and I can concentrate on the sums. Then perhaps I meet a sum which does not work out. I get flurried and spend too much time on it. I begin to make slips and worry about the time. I find myself unable to concentrate, put down entirely wrong statements, and my mind becomes a jumble of meaningless figures." This effect is most common amongst the weak students who distrust themselves.

"When sure of facts your mind is quite clear—you do not become flustered and you concentrate—when less sure you think 'Now is this right?' 'I wonder if this is it,' and you get yourself into such a state of confusion that mistakes occur."

"Since childhood arithmetic has been a weak subject and frequently the very consciousness of my inability to do it has made me so nervous and despondent that instead of my being able to concentrate all my thoughts on my work, anything from state of mind 3 to 4 has been produced, or even nearly 5 (paralysis)."

(5) Distracting thoughts about other things arising from student's own mind (e.g., worry) or from outside sources (noise—particularly regular noises) are mentioned by many. Lack of interest causes concentration to be difficult. Three students said that the questions 1 to 3 were easy but tedious, or uninteresting, and all showed first degree of confusion in their work.

(6) Fatigue towards the end of the paper is mentioned by five students as causing confusion.

(7) Relying upon rules and not having clear memory of them.

"Coming up against sums when one knows there must be a special rule to suit them and being unable to recall the rule to mind causes a mental panic, when absurd mistakes are made." (Student subject to mental state 2.)

"When sum is very complicated, and method known is vague, the mind is conscious of the defect and not sufficiently strong enough to battle with it and try to clear it, and one mistake follows on after another, until the whole thing becomes absolutely confused in the mind."

Many of another group say that they "do not remember any sums like these," or were "unable to recall methods by which they were done."

"Main trouble with our students is their desire to find a rule into which to fit every question. When they cannot find the right label for the sum, they think they cannot do it and they don't." (A Lecturer.)

At bottom the confusion means inability to concentrate, and the various "causes" are reasons why attention was distracted from the sum itself. It is very clear that fear plays a large part; fear lest mistakes are being made; fear that method is wrong; fear that work will not be finished in time; fear that others working quickly means that one is falling behind; fear that one cannot do the sum, that it is hard, that there is a catch in it; fear of "failing in the exam." All these raise strong counter suggestions: fear that one may be unable to do a question is paralysing to the mind.

In studying the papers one is very much impressed by the lack of confidence of students in themselves and their own power of reasoning. They work by rules—always look for the rule. "I was unable to recall the methods by which they were done," says a student who failed ignominiously in arithmetic test.

One is reminded that in many schools arithmetic is still taught as a series of "rules," and some children never get beyond the stage of saying: "What kind of sum is it?" and being helpless until they can label it and treat it by some routine method.

Students who are good at arithmetic are less liable to confusion, but they are not free from it. Mental States 2 and 3 occurred among them in this test, and the causes suggested were the same as among the weaker students.

III.—EFFECTS OF DIFFERENT WORKING CONDITIONS.

In view of what was said about the effects of examination conditions and examination anxieties, it is of interest to compare the amount of mental confusion shown in particular questions in this classroom investigation with the amount shown in the same questions when worked under different conditions. This test was not an examination, the papers were anonymous, and there should not have been any of the mental disturbance which is often produced by an examination, but the students had been told to do as many questions as they could in the fifteen minutes, and therefore the element of haste was present. The following results are typical of the comparisons obtained. The figures give the distribution of mental states while doing questions 1 and 2.

Conditions of Work.	*Mental State* 1.	*Mental State* 2.	*Mental State* 3.	*Mental State* 4.
Question 1.	per cent.	per cent.	per cent.	per cent.
Examination Group A	60.0	13.13	11.0	15.5
Examination Group B	61.8	16.2	13.2	8.8
This investigation	74.8	20.2	5.0	—
Unhurried Class work	89.2	5.4	5.4	—
Question 2.				
Examination Group A	58.1	9.3	18.6	14.0
Examination Group B	58.6	15.5	19.0	6.9
This investigation	50.0	40.6	7.8	1.6
Unhurried Class work	66.6	20.0	13.3	—

Group A (45 studen ts) and Group B (68 students) were composed of first year students from two other colleges in different parts of the country. The amount of agreement between the figures for the two groups is very interesting. It is evident that the elimination of examination anxieties and of hurrying reduces the amount of mental confusion but does not eliminate it, and that it is still present in ordinary class work.

IV.—MENTAL CONFUSION DURING ORDINARY CLASS WORK.

Further investigation was made with two small classes working for Mathematics Ordinary Course in a training college. The aim was to make individual studies of failure to obtain correct answers when working under the best conditions, with questions which are well within the students' own powers. In seven successive weeks at the beginning of one class period the students were given a set of three or four questions. These sets did not include the very easy arithmetical types of the first test. None could be done by a mechanical method, but all were within the students' powers. Conditions were made as nearly as possible the same for each test ; the students were allowed as much time as they liked ; there was no anxiety about the results ; all the conditions known to favour the occurrence of mental confusion were eliminated. After finishing each question the student reported in writing what her mental state had been during the work. If her mind had lapsed from State 1 she gave any clue she possessed as to the causes.

Additional information was gained (when necessary) by individual discussion with the student. Every case of failure to obtain a correct answer was analysed with the student herself. Although the classes were small (thirteen and twelve respectively) they comprised considerable variation in ability and temperament. Their members were interested in the tests, found that they derived benefit from the analysis of their individual results, and to some extent gained in ability to avoid mental confusion.

In discussing mental processes involved in the solution of an arithmetical problem, it was often found helpful to compare it with a jig-saw puzzle. In both cases successful solution depends upon recognition of the relationships existing between the given data (or " pieces ") and also upon the steadiness with which they are held while being built together into the required picture.

The speed with which relationships are discovered depends in each case upon intelligence and experience. A slow child has to examine each piece of the puzzle separately, study its shape and colour, and slowly construct, bit by bit, the picture which a more intelligent child or an adult can visualize almost before he fits the parts together. Similarly the more intelligent A may see the answer to a problem long before the less gifted B has put together the pieces and arrived stage by stage at the same result. Intelligence determines the speed of work and also the complexity of the relationships that can be seen as wholes. For any given level of intelligence

there is a stage of difficulty or unfamiliarity of problem which makes it necessary to work by surveying each piece of data carefully, finding links between one and another, arranging them together and holding each group steadily until the whole picture is formed and the answer can be read off; success depends upon ability to hold the pieces steadily in place.

Whatever the level of intelligence and the corresponding complexity of the problem that can be tackled, this stability of the mental field is a determining factor, just as the steadiness of the jig-saw puzzle is an essential feature. Lack of stability in the mental field produces lack of clearness, pieces become misplaced, some are lost. According to its degree, it produces confusion in the working of a sum which may, or (if slight) may not, be realized by the student.

The usefulness of the scale suggested in previous work for denoting the degree of mental confusion was confirmed; the mind's condition ranging from 1 (perfectly clear) to 5 (paralysed).

In studying the mistakes made it was found that in some cases intelligence was unequal to seeing the relationship and failed to arrive at an answer, or not realizing the situation, returned a wrong answer. Pieces may have been put together that really did not fit, and sometimes the student found difficulty in seeing the mistake even when it was pointed out. This is a failure in ability to do the question, and it appeared among weaker students when doing harder questions.

But more striking was the prevalence of failures due to lack of the second factor, stability of the mental field, causing some degree of confusion. When the question is not of a perfectly familiar type, a student has to "think it out," i.e., examine the "pieces," find their connections and build up the required structure. If the mind continues its exploration of the question, order may gradually (in sudden jumps) emerge.

The danger is that the mind may lose its steadiness (control of attention?) and begin "dashing round." Attention is no longer given fully to each "piece," groupings already formed are allowed to fall to pieces, and the mind becomes too confused to do any constructive work.

Analysis of Results in One Class.

The groups of questions contained five on contracted methods, five problems which dealt with percentages, and eight problems of a general kind. As these are somewhat different in nature, the first and second approaching more nearly to conventional types, the numerical results are returned separately.

Total number of answers were :

To contracted methods questions	59
To percentage problems	62
To general problems	100

A detailed investigation of the mental processes of the students suggested that five types might be distinguished. The results in the two classes agreed very closely, and indicate what is likely to happen in any class doing this kind of work.

Type I.—Cases in which success was achieved easily with a sense of confidence and mastery. This occurred as follows :

Type	I	occurred in	74.6 per cent.	of the answers to contracted methods questions.
,,	I	,,	42.0 ,,	of the answers to percentage problems.
,,	I	,,	40.0 ,,	of the answers to general problems.

Type II.—Cases in which the correct answer was obtained after considerable exploration. The student could not see her way but kept control. She tried different arrangements of the pieces, held them steadily, and was able to test each step in construction as she built up the picture, and so was able to complete it by degrees. In approximately half of these cases the progress was not steady. Lapses into states 2 and even 3 had intervened, but the students had recovered steadiness and carried the work to a successful conclusion.

Type	II	occurred in	5 per cent.	of the answers to contracted methods questions.
,,	II	,,	8 ,,	of the answers to percentage problems.
,,	II	,,	20 ,,	of the answers to general problems.

Type III.—Cases in which the student was unsuccessful in obtaining an answer but had no sense of confusion and showed no sign of it in her written working. She made explorations, tried different lines of attack, but did not make any erroneous statements. This is the type of mental activity which is likely to arrive at the right answer unless the mind loses its steadiness of control or lacks the requisite level of intelligence.

Type	III	occurred in	0 per cent	of the answers to contracted methods questions.
,,	III	,,	3.2 ,,	of the answers to percentage problems.
,,	III	,,	8.0 ,,	of the answers to general problems.

Type IV.—Cases in which there is not adequate intelligence (or experience ?) to deal with the problem. During the exploration an incorrect statement is made with complete confidence and no evidence of confusion, a wrong answer obtained and passed.

Type	IV	occurred in	0 per cent.	of the answers to contracted methods questions.
,,	IV	,,	16.1 ,,	of the answers to percentage problems (chiefly due to one question).
,,	IV	,,	4.0 ,,	of the answers to general problems.

Type V.—Cases in which the student's mind loses its steadiness (controlled attention ?) and becomes confused. This confusion may be of any degree, ranging from mental state 2, through 3 and 4, to complete paralysis. This last stage occurred in 1 per cent. among 100 answers. The mental state was gauged from student's own statement *and* the working shown.

Among contracted methods answers—

Mental State	2	occurred in	17 per cent.	20.3 per cent.
,, ,,	3	,,	3.3 ,,	

Among percentage problems answers—

Mental State	2	occurred in	8 per cent.	24.1 ,,
,, ,,	3	,,	16.1 ,,	
,, ,,	4	,,	0 ,,	

Among answers to general problems—

Mental State	2	occurred in	4 per cent.	25 ,,
,, ,,	3	,,	20 ,,	
,, ,,	4	,,	1 ,,	

This meant that from $\frac{1}{4}$ to $\frac{1}{5}$ of the students fell into mental confusion and did not recover State 1.

In Mental State 2 the " confusion " is of a superficial nature, occurring on the outskirts (so to speak) of the question. Complete attention is not being paid to the details, e.g., mistakes in simple

multiplication and division are frequently made ($25 \div 4 = 5$; $2 \times 3 = 8$) in the course of calculation ; or attention is relaxed from the easy steps, or at end of one stage of work, or at end of question, with the result that some " slip " is made—sometimes with serious results.

At this stage (Mental State 2) the student usually considers herself free from " confusion " and it does appear to be a preliminary stage ; some students are more liable to fall into it than others. In some there is a tendency to fluctuate between 1 and 2. This may be an example of oscillations in efficiency.—(Spearman—" Abilities of Man.")*

In some cases it was possible to find other causes. It usually arises when students are able to do the question, and usually in the mechanical stages. Attention is apt to wander while the mind is doing mechanical operations, either because the student over-rates her power of doing them without full attention, or because her mind tends to run ahead to the next stage before finishing the one in hand, or even to the next question. One student (one of the four best, mathematically) said : " I am much more interested in the method and the abstract principles than in the numerical results. Being careless with them is an old failing."

In Mental States 3 and 4, it is not only the outskirts of the question that are affected, but, using the comparison with the jig-saw puzzle, the whole picture remains disconnected or even chaotic. Attention is seriously diverted, the mind loses its steadiness. Suggestion plays a very large part in these stages ; destructive thoughts break in, scatter the " pieces " more quickly than they can be put together, so that even though the undisturbed mind could solve the problem, its work is destroyed by irruption of undisciplined thoughts.

The students' analysis of the causes showed that many of the factors which produced confusion in examinations were active here, although the work was done under very different conditions. The phenomenon of mental confusion is the same ; it only differs in degree. Fear (in a milder form) still arises. The thought " It isn't going to come out " intrudes itself on very slight provocation and effectively prevents constructive work. It may be aroused in many of the ways mentioned in connection with examinations. Slowness

* Recent work claims to have established " oscillation " as a general factor, entering into every mental activity and varying in degree for different individuals. The simplest tests used for its measurement are the " dotting " test and " Kraepelin " addition test. These were given to sixty-six students and correlation made with their liability to fall into mental confusion when doing arithmetic. Between dotting and mental confusion $r = .17$. Between Kraepelin addition and mental confusion $r = .71$. This suggests that " oscillation " is one of the factors responsible for mental confusion.

in discovering a solution ; having to deal with large numbers ; using a cumbersome method ; the sight of other students who appear to be getting on more quickly ; all reappear.

As in examinations one of the commonest causes is the discovery of a slip or a mistake ; many students find it difficult to steady their minds and regain confidence after finding themselves at fault. Failure in tackling one question rendered a number unable to think clearly about the next. " My confidence was destroyed and my mind became confused " is reported by a good student. A variation is given by a student whose " Perseveration " was high. She wrote : " I became very confused over Number 1—knew that there was an easy way but couldn't see it. I knew I could find it. When I turned to Number 2 my mind kept going back. I could not keep my mind off Number 1." The effects upon the working of Number 2 were typically those of Mental State 4, and confusion spread to Question 3 also.

Sometimes alternative methods of attack are allowed to jostle one another and prevent full attention being given to any one of them. This was reported by several. Sometimes the student begins to search after vague memories of methods used for similar problems in the past ; doing it unintelligently, she throws her mind into confusion and loses the power to hold the data clearly and steadily. This is common among those who are out of practice and doubt their own powers—and also among the weaker students.

In the weaker students lack of intelligence was definitely a cause of confusion. They could not sort out the data and build a picture for themselves, though they could reproduce memorized patterns. If they succeeded in constructing some part, the order of the design was very insecure and the pieces fell apart before they could be utilized ; the fragments transferred to paper were distorted and the work was suggestive of Mental State 3 or 4. Whether the student's mind is able to resist all these influences making for confusion depends upon its stability.

V.—MENTAL STABILITY.

The term " mental stability " is useful for purposes of description, but is not easily defined nor is its relation to processes of cognition readily understood. It is very closely connected with " controlled attention " and " attention is an essential factor in intelligence." It might be expected to correlate highly with mathematical ability and with general intelligence, but as far as available evidence went this did not appear to be the case in these classes.

In order to obtain more information upon this point another investigation was made. Sixty-six first year students were given an intelligence test composed of synonyms, completions, mixed sentences, proverbs, reasoning. Their mental stability was measured by degree of freedom from mental confusion in an arithmetic test similar to that described at the beginning of this article. The correlation between intelligence and mental stability gave $r = +.009$, i.e., there is no connection between the two—a somewhat surprising result.

Mental stability may be a character trait connected with the general factor " w " which is not cognitive but conative, and is " describable as purposive consistency or even as self control." A tentative rating of the students for emotional stability was made. A correlation between this and their mental steadiness as measured by the tests gave $R = .45$. (The approximate method of Spearman's " Foot Rule " correlation by rank was used.) This gives some support to the idea of " stability " as a general character factor. If this is so, then mental stability is a factor in general ability, affecting all subjects, not only arithmetic (though its effects may be more obvious here), and its strength determines whether the cognitive process keeps the mental field or not. The competing emotions or other distractions vary in force from time to time, " oscillation " is always present, and unless stability is sufficiently great they upset the balance, break into the cognitive processes, and mental confusion results.

These investigations have been made with women students (ages 18 to 20 in most cases), but there is little doubt that similar results would have been obtained with the older girls of a secondary school. It would be of interest to find out whether younger children are equally susceptible. Some light may be thrown on the matter by the work of D. Collar on 200 boys in an elementary school.* In his careful statistical survey of arithmetical abilities, he finds much evidence of the variability of the individual. Discussing the low inter-correlations of tests in addition (subtraction, multiplication, and division), he writes : " Even in exercises as simple and uniform as these the individual child exhibits marked variability in performance." Among his conclusions he states : " The variability in form of the individual child is apparent in all kinds of mental activity. It is particularly pronounced in problematic arithmetic." It appears very probable that this " variability " may be the same phenomenon as has been studied among students in this research.

* *Brit. Journal Psychology*, 1920.

Whatever the full explanation may be, this matter of mental instability and the resulting mental confusion lies at the root of much of the arithmetical weakness, and it is a subject of practical importance for educationalists, particularly for teachers of arithmetic and mathematics. This research indicated that it was possible for a student to gain control over mental confusion to some extent. This was done not so much by a frontal attack, by a definite effort of will, as by avoiding the occasion of its arising. A study of its ways appeared to enable some students to maintain mental stability a little more securely, but the investigation was not continued sufficiently long to show how far this could be done.

A Modern Philosophy of Education.

By Godfrey H. Thomson, Bell Professor of Education at the University of Edinburgh. (George Allen and Unwin, 1929. Pp. 283. Price 8s. 6d.)

"THIS BOOK," says Professor Thomson, "has grown out of a series of notes and writings which I looked upon as my educational creed, and thought of publishing under that title. But, on further consideration, creed seemed hardly the word for a balance of opinions, which were yearly in a state of flux, in the mind of one who is philosophically agnostic." It seems somehow a quaint result that the title of philosophy should be chosen instead, even with its own disarmingly modest explanation on the preceding page. Seriously speaking, I am sorry it was chosen, because it may have played its part in pressing the author to attempt a comprehensiveness which has injured the work. This seems to me a good and useful book with some flaws in it. With a narrower title, the flawed material might all have been omitted, and the rest would have stood all the better by itself.

I will postpone to the end of this review the discussion of the parts I should like left out, and will deal first with the main body of the work, which we must all be glad to possess.

Apart from his personal qualities and his fresh and readable style, Professor Thomson has two strong pieces of equipment: his training in natural science and his varied and valuable experience in four different countries (England, Scotland, Germany old and new, and America). The former training is immediately useful when he describes "The Function of Education in the Biological Record," and shows how education in the widest sense—the influence of the environment on an educable creature—has trained the individual to fit that environment, and then to modify it, and then actually to modify himself and his own instincts. This chapter contains a brief discussion (too brief to be quite clear) of the decreasing birth-rate among educated people. It would be benefited by a reference forward to Chapter 9, where the subject is much more fully treated. I would suggest also that in a second edition the author might modify the wording of one of the following passages (the italics are mine):

> Page 20.—"Advance in the scale of evolution along such lines as these could only be made by the emergence of creatures with more and more *complicated* instincts. Such beings we know in the ants and spiders. *But another line* of advance was destined to open out a much more far-reaching possibility of which we do not see the end perhaps even in man . . ."

> Page 31.—" . . . In man the picture we have drawn is one of plastic rather than well-defined and specific instincts. Probably *that is the same thing* as extreme *complexity* of instincts, so that there is great uncertainty, much blocking and interference, much possibility of selection."

I can see that both sets of statements, taken carefully, may be correct, but the verbal effect is likely to confuse inexperienced readers.

The next chapter deals with " The Factors of Education and the Function of the School." An excellent passage warns us to distinguish between a unique or characteristic function and other functions which may be even more important. The school has not only to give book-learning, but to co-ordinate the other educative factors in the environment—home, church, vocation, and the rest—and book-learning itself can be divided into mastery of an essential minimum and a wider culture which should go side by side with this. Professor Thomson sets forth the details with sound and helpful common sense. Does he go rather far when he says that employers have a right to expect " absolute " accuracy in simple sums and spelling and reading ? My experience is that sixteen years of schooling are too little to produce such accuracy in the ordinary university student in England or America, and I doubt whether human nature is capable of having it produced.

This chapter paraphrases sympathetically the argument of Dewey and Kilpatrick, " that much character training, which in a simpler society was cared for . . . by the general life of the community, must now, in our complex civilization, be looked after by the school." On the pioneer farm " the tasks of life were set by stern necessity, were easily understood, and required the co-operation of all ; " but in the New York apartment or the London flat " there are few or no natural jobs which fall to the lot of the children and teach them to bear their share in the life around them." The contrast is, of course, highly important, though I believe myself that its essential is not the contrast between two eras but the contrast of the majority in any era with the few well-to-do. There are plenty of natural jobs for the children in a servantless household, though tradition may concentrate them too much upon the girls. And when it is said that the town civilization is " complex," " largely hidden from view in its inner workings," is the same not true upon the farm ? The shilling in the slot that brings the gas is less mysterious than the seed dropped in the earth that brings the wheat. In all eras, one duty of the school is to make the world more

intelligible wherever it can be done. In all eras, the schools for rich children must supply the responsibilities and human tasks which their homes fail to give. And in all eras for all children perhaps the best thing a school can give is described in Professor Thomson's phrase: "social solidarity and comprehending co-operation." It is a gift not magically ensured in the life of a pioneer farm, if we are to believe the novelists of the Middle Border.

Chapter 4 has "Reflections on the Aim of Education." Its first half is an excellent discursive survey of possible aims. I enjoyed specially the passages on Plato, and on the right use of a sieve, and on the contrasted statements of the English Code and the U.S. Commission. With the second half of this chapter I will deal later on. Chapter 5 is devoted to "John Dewey," and leads up to one of the best accounts I have met of the theory and practice of the project method. Chapter 6 I will also postpone for treatment later.

In the pages which follow on "Heredity and Education" and "The Social Inheritance," we have a very clear and well-informed account of the workings of bodily heredity, taking account of the most recent contributions of biologists; and an equally well-informed discussion of the probable weight of heredity in determining (for instance) a child's intelligence, as compared with the weight of other factors. I should like only one sentence altered; on page 143, where intelligence is chosen as a typical quality out of a list "in which we are chiefly interested as educators . . . assiduity, kindness, honesty, insight, intelligence, abstract thought." A small change would abolish the risk of suggesting to students that an ethical achievement (or principle or sentiment) such as honesty may be related to biological heredity in the same way as intelligence.

Chapter 9 deals in a common-sense way with the reciprocal bearings of "Population and Education;" and Chapter 10, under the title of "Competition and Co-operation," has some of the best matter in the whole book. The first-hand comparison which Professor Thomson is able to make between the old and the new Germany, and the document that he quotes on the origins of the youth movement, are most illuminating; and the whole chapter is written not by a mere schoolman but by a wide-minded sociologist.

I agree with nearly all that Professor Thomson writes on "Education in Early Adolescence" and "in Later Adolescence,"

and on "Adult Education."* He would amend the Hadow Report by urging one big school containing various courses in preference to the separated grammar school and modern school. He sees the value, for many young minds, of a schooling which has a vocational shape, and he gives an interesting account of an Edinburgh system of continuation classes, filling the place of the old apprenticeship and teaching real skill in a trade. Oddly enough he seems to leave out one of the hardest problems. "In the industries," he says, "what is principally required from the workman is . . . some skill or other, ranging from the rather crude skill required from the so-called unskilled labourer, up to the extremely refined dexterity of the cabinet-maker, mechanic, sign-painter, or other craftsmen." But are not our factories demanding a mass of work for which "rather crude skill" would be a startling euphemism? I have heard an engineer tell an audience that the curse of English engineering was excess of skilled labour; that the work most needed was of such a kind that every person present could reach the required standard within a week. What is the proper adolescent schooling for those who are going to spend their working life along these lines? The answer, perhaps, lies implicit in the chapter on "Adult Education," the field in which "men may come together again just as men." This is a good chapter, though I wonder why Professor Thomson concludes his sympathetic account of the W.E.A. by a page on "the folk high schools of Denmark, now being largely imitated in Germany," without any mention of the resident workers' colleges in England.

I hope by this time I have made it clear that I think this is a valuable book which should do good work. I must now come to my quarrel with Professor Thomson. Briefly and frankly, I like him as a man of science, and a sociologist, and a man of the world, and an organizer, and a teacher. I don't like him when he feels obliged to become a moral philosopher.

With Chapter 6, on "Education and Free Will," I will not, indeed, quarrel much. The author says that Scottish students, wherever they may start, generally arrive at the question of free will before the end of the hour; so that one can understand their professor feeling obliged to tackle even this irrelevant question.

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*The quotations at the head of the different chapters are nearly always suggestive and helpful, but on page 197, between the chapter heading with "Early Adolescence" and the first paragraph which suggests that "11 to 15 may be called the years of early adolescence," why should the author quote W. S. Hall to the effect that the *pre-adolescent* period extends from 10 to 14?

I think that his discussion does justify his own hope ; (page 114) " At least it may have given the impression that the existence of the problem is not unknown to the writer, and it may have suggested . . . to students who have had no training in that form of thought, some new ways of looking at old facts which may make the thinker rather more humble and less confident." But I protest against the concession with which he begins ; " the eternal question of free will, *which clearly is at the bottom of the problem of how much we may hope to effect by means of education.*" How can this be ? I can see that an extreme indeterminism indeed would forbid us to hope to effect anything by means of anything ; but short of this, what have the two to do with each other ? " The complete doctrine of determinism implies that what we are teaching to-day is forced upon us by our own past mental history, and that any impression that we are acting off our own bat is merely a delusion " (page 108). Whether this doctrine be true or false, how does it bear on the question of whether we may hope to effect much or little by means of education ?

If the author would cut out this concession I should not mind English students reading the chapter.* It has nothing to do with their business in the training year, but it would be hard, while one was at college, if one might not leave one's business to think about metaphysics. The pages that I do object to their reading are in a different position because they *are* concerned with educational business. They are contained in the second half of Chapter 4, pages 67-76, and deal with the question : " What is the highest good ? "

I find it difficult to write about these pages. One feels intolerably arrogant in appearing to discuss Professor Thomson's work *de haut en bas* ; yet honestly after persistent re-reading he seems to me not only to be making (or leaving unprevented) some historic confusions, but to be adding some others which are quite his own. May I quote two passages :

> " Let us ask why self-denial, or duty, or any of the sterner virtues, are virtues at all. And let us ask whether, when we obey a call of duty, we do not do so because we would be miserable if we didn't—that is, because of the comparative pleasure of acting according to duty.

*At any rate, if he would transfer to some other place the concluding pages 115-17, which are quite good, but make a bewilderingly sudden change to a different meaning of freedom.

> "Take the last point first. It raises the question of what we mean by pleasure, and how we decide that a thing is pleasant. Commonly we reply that we just know a thing to be pleasant. Pleasure is a name for a state of mind which we recognize when we experience it. The argument contained in the last sentence of the last paragraph, however, defines a pleasant action as one which we choose to perform, since, it is said, we would not otherwise choose it." (page 68.)

But if a pleasant action is *defined* in this way the argument referred to appears to collapse. Its statement becomes verbal and nothing more. I have read many times to the end of the chapter without being able to decide whether the word "defines" is intended.

> Page 69.—"We have just seen that education can change the things at which we feel pleasure. What things ought it to select for this? Duty, reply the sterner sort. Which brings us to the former of the two questions we asked, viz., 'Why is duty a virtue?'
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> "To this some reply that we know our duty, we know what we ought to do, just as intuitively as we recognize pleasure when we are experiencing it. But the utilitarians have another answer. That is out duty which, in the long run, increases the sum total of happiness in the universe."

Here again I am left wholly bewildered. These two answers, so far as I can see, are not attempts at answering "Why is duty a virtue?" at all. They are answers to "How are we to know our duty?" or "What is our duty?"

What am I to do? I want to put the book in the library and to recommend it to students, but I want to cut out these ten pages first. I should like also to cut out brief passages elsewhere; some sentences, for instance (on pages 31-33) in the account of the evolution of morals, which give the impression that a calculation of the interests of the tribe preceded the direct admiration of courage. And I should like to get drastically re-written the deprecation of Reason on pages 264-65 of the concluding chapter.

Finally, I return to the beginning of this review. None of these pages and passages need have been put in if Professor Thomson had chosen some narrower title for his book. If in a future edition they can drop out, the rest of the book will not be injured in the least, and we shall be able to be purely grateful for it.

HELEN M. WODEHOUSE.

Book Reviews.

Education in Kent (1923-1928). (Athenæum Printing Works, Redhill. Pp. xi+314.)

This substantial volume of more than 300 pages—the Quinquennial Report of the Kent Education Committee—is much more than a statistical record. It is the story of a systematic and carefully conceived attempt to advance cautiously and uniformly along the whole line. It describes the policy and ideals behind the practice of one of the great local authorities, and should be of first-rate value to many whose interest in the problems of national education lies in a quieter academic field.

Kent, with an area of a million acres and a population of well over a million people, has peculiar problems of its own. It does not contain a single large town, and the only county borough is the very small city of Canterbury ; but, in addition to the County Council, there are no fewer than seventeen Part 3 authorities autonomous for elementary education purposes. In the elementary educational area under the County Council there is no district in which the population is sufficiently large and concentrated to justify the establishment of a selective central school. The problem of dual control is acute, since out of a total of 437 public elementary schools in the County Council area 282 are non-provided. The Kent Education Committee, however, in co-operation with the Diocesan Boards, have made admirable progress towards securing the sympathetic co-operation of the church authorities in schemes of reorganization.

The report shows that a great deal of slow and careful work has been done during the last five years on the foundations requisite for future development. The Committee have concentrated largely on the acquisition of sites : " approximately 1,100 acres of land have been bought in recent years for use in connection with the education service " (p. 162). There is an illuminating discussion, in the first chapter of the report, on the deficiencies of most of the elementary school buildings in the face of modern requirements. This throws light particularly on the troubles that will follow any premature and universal enforcement of a higher leaving age. " It has been found upon examination that there are very few buildings indeed in any district (in Kent) which can be made to serve the purposes of senior schools " (p. 41).

It is clear that the elementary problem is the real difficulty in Kent ; but steady, if slow, progress is apparently being made towards its solution by the gradual provision of new senior and central schools all over the county. The Committee have arrived at a more or less standarized plan for such schools. " The ' modern ' or central school for 400 boys (or girls) has four large practical instruction rooms each of 900 to 1,000 square feet, seven or eight classrooms of 480 square feet, and two medium-sized rooms of 600 to 750 square feet, together with a hall, which also serves as a gymnasium, and very often a dining room to provide for children coming from a distance " (p. 4). The unusually large practical rooms are noteworthy : the dimensions are considerably in excess of those suggested in the Board's " New Prospect " pamphlet.

Chapter V of the report gives details of the large amount of additional secondary school accommodation provided during the five years in almost every district. Twenty-four sites for new secondary schools or playing fields have been acquired, four large new secondary schools have been built or provided, and nine schools have been enlarged, some very substantially. The Kent Education Committee are not in favour of mixed secondary (or senior) schools.

As regards further education the report shows that between 1923 and 1928 the number of students in technical institutes, schools of art, etc., increased by 50 per cent. The increase is particularly apparent among

senior students, both in technical institutes and in schools of art. Even in rural areas the increase in numbers is perceptible, though the extent of the work (71 centres and 2,091 students) is not great.

A detailed account is given in Chapter XIV of the very large and successful stores department maintained by the Committee. Much interesting detail is given in this chapter, and in Chapter III, about the supply of school books, furniture, and apparatus. The Committee are systematically replacing the old-style desks by portable flat-topped tables and chairs in most of their elementary schools, and are experimenting with gramophone records, lantern slides, stereographs, and cinema projectors. The following chapter (XV) gives a similar account of the activities of the buildings department, and includes expert discussion of the advantages—e.g., of oil-fired boilers and of electrical heating for schools, financial statistics of which are given.

The appendices provide a mine of statistical information, together with a number of plans and photographs of recently-built schools of various kinds. Except in one or two instances the building cost per place is not stated. The maintenance cost per head in elementary schools works out at present at £10 5s. 0d., and in secondary schools at £27 5s. 0d. The total expenditure out of revenue last year in elementary education was approximately three-quarters of a million, and outstanding loans amounted to a quarter of a million. On higher education the total expenditure out of revenue was nearly half a million, and outstanding loans were over half a million. Receipts from fees came to nearly £100,000. The average elementary education rate for the past five years has been 1s. 10½d. The corresponding figure of the higher education rate does not appear to be given.

A point of special interest in the report is the Committee's policy with regard to dull and retarded children (pp. 5-6), and the special effort that is being made to cope with this problem. A useful standardized form of pupil's record card, with an "attainments profile," is printed at the end of the report. The Kent policy—of special classes, forming part of ordinary schools, instead of special schools—is endorsed by the conclusions of the Mental Deficiency Committee.

Other points of interest in the report are the long chapter (XII) on agricultural education, including a description of an experiment with a travelling blacksmith's demonstration van (acetylene welding and cutting plant, etc.), the account (p. 15 and p. 26) of the investigation, undertaken at the request of the Carnegie United Kingdom Trustees, and in collaboration with the B.B.C., into the educational possibilities of broadcasting; the chapter (XI) on vocational guidance, a branch of educational administration in which the county has done definite and pioneer work; and the almost romantic growth of the county library, in which Kent has again been a pioneer. The county library had at the end of 1927 a book stock of 87,500 volumes; the issues, now approaching a million annually, increased more than six-fold during the five years, and the two library motor vans, attractively fitted with bookshelves, and each carrying 2,000 books, delivered during 1927 more than 150,000 books at the 344 library centres in the county.

It is a comprehensive report, and gives in compact form a picture of the ferment of hard work and hard thinking which is going on in administrative quarters, often unjustly decried. It is worthy of note that, in spite of the widespread and intensive staff work carried out from headquarters and in local centres, the cost of administration in relation to the total gross expenditure is lower than the average, amounting to less than 4 per cent.

The humanity and sympathy of Sir Mark Collet's preface is a reminder that Kent has been peculiarly fortunate, not only in its Director of Education but in the personnel of its Education Committee and particularly in its chairman.

A.E.D.

Infancy and Human Growth : by Arnold Gesell, Ph.D., M.D. (Macmillan. Pp. xvii+418. 15s.)

Those who are familiar with Dr. Gesell's earlier work will welcome a new book from him. The present volume records the results of further investigations along the lines of those described in "The Mental Growth of the Pre-School Child." These further studies give additional evidence of the value of tests, even for the early ages, 4, 6, and 9 months, and for the stability of the "intelligence quotient" from these early months to the third and fourth year, if we assume that the tests are genuine tests of intelligence. The extent, however, to which success in the various kinds of tests depends upon specific abilities is shown by the "palpable disparity," to quote Dr. Gesell's own words, "in the rate of development of different lines of behaviour in the same child."

The book also describes new experiments by means of special observation chambers in which the observer is not seen by the child, and with photographic films taken of the child at play.

There is a further valuable discussion of the concept of mental development and some important facts are established. Among these we may note, for example, the fact that some unusual bodily conditions and physical limitations may have very little, if any, influence upon mental development at the time. Rickets, for example, are found to have less influence than is usually supposed, though it seems to me that Dr. Gesell's own figures in the table on page 270 suggest a marked inferiority in walking capacity, at least, among rachitic children.

The specific nature of mental development is remarkably shown by detailed studies of individual cases; for example, two children of average intelligence were remarkably defective in drawing ability, and in another case a child, deprived almost from birth of motor ability and with the general motor control, including vocalization, at $4\frac{3}{4}$ years, of an infant of six months, yet evinced "comprehension of language" almost up to the normal for his years and a "span of attention" rather beyond the normal.

The last section of the book, on "The Significance of Infancy," is more general, discussing in a lucid way such problems as heredity and mental growth and the possibilities of measurement and prediction of mental growth. The whole forms a most valuable contribution to the study of the psychology of early childhood. C.W.V.

Contributions to Analytical Psychology : by C. G. Jung. (Kegan Paul. Pp. 410. 18s. net.)

The greater part of this book comprises a collection of essays published in various journals, and dealing with such different topics as Analytical Psychology and *Weltanschauung*, Woman in Europe, Marriage as a Psychological Relation, the Relation of Analytical Psychology to Poetic Art. The first section, however, is new, at least it has not been published before in its present form, and it deals with Jung's view of "psychical energy," in which he expounds his view of the libido. The parts of the book of most interest to readers of this journal are probably the four lectures on "Analytical Psychology and Education," and that on "The Significance of the Unconscious in Individual Education."

In the first of these Jung stresses especially the great influence on the infant of the emotional attitude of the parents, and of the responsibility of the teacher when he becomes at a later stage a "substitute" for the parent, when he ought, so Jung argues, to help to lead the child away from any excessive determination by home influences.

In the second lecture, after some general observations on the development of analytical psychology, Jung indicates the types of mental disorders with which teachers ought to be familiar. Here the most significant suggestion is that whenever a young child develops signs of neurosis we should begin our researches by examining the mother !

In the third lectures Jung gives what seems to me an eminently fair appraisement of Freud and Adler ; in the fourth are described a series of interesting cases of young people treated by Jung.

The whole volume constitutes an important work for the student of Jung's views. C.W.V.

Psychological Care of Infant and Child : by John B. Watson and Rosalie Watson. (Allen and Unwin. Pp. 159. 5s.)

Here is the practical advice to parents to which " Behaviourism " gives rise. The characteristic views of Dr. Watson are set forth in a simple and lucid way, much being based upon his inconclusive experiments on conditioned reflexes. In the midst of many sensible warnings against overpetting one finds recommended to parents an "objectivity" of attitude towards little children that seems to me in its extreme form essentially harmful and lacking in understanding of ideal relations between parent and child. The following is said to be the " sensible way of treating children " : " Treat them as though they were young adults. Dress them, bathe them with care and circumspection. Let your behaviour always be objective and kindly firm. Never hug and kiss them, never let them sit in your lap. If you must, kiss them once on the forehead when they say ' good night.' Shake hands with them in the morning. Give them a pat on the head if they have made an extraordinarily good job of a difficult task. Try it out. In a week's time you will find how easy it is to be perfectly objective with your child and at the same time kindly."

I commend also to the reader Dr. Watson's scientific inference as to girls' interest in boys, based on experiments with rats.

To parents with a slight knowledge of psychology and a sense of humour this book will provide excellent reading, but not entirely in the way in which it was intended. C.W.V.

Practice, Fatigue, and Oscillation : A Study of Work at High Pressure : by J. C. Flugel, B.A., D.Sc. (*British Journal of Psychology Monograph Supplement,* No. XIII.) (Cambridge University Press. Pp. 92. 8s. 6d.)

This is a report of a most valuable investigation on original lines. Dr. Flugel conceived the bright idea of maintaining effort in children at its maximum by rewarding them in proportion as they improved on their previous performances. The method involved the expenditure of many pennies, but thoroughly justified itself, and was, no doubt, a very acceptable one to the school pupils who took part in the experiment.

Of special interest to students of education are the following results :

" On the whole the more able subjects tended also to improve more than the less able ; hence the individual differences in ability were larger at the end of the experiment than at the beginning, though individuals tended to maintain their rank throughout."

" The more able subjects showed a larger variability from day to day than the less able."

" Success in tests of arithmetical ability and in a general school examination correlated more highly with ability in the experimental work at the beginning of the experiment than at the end." C.W.V.

Feelings and Emotions: The Wittenberg Symposium. (Clark University Express. Pp. 454. 28s.)

This substantial volume is the result of a symposium held at Wittenberg College, Ohio, in 1927, to which over thirty well-known psychologists contributed. As the book includes thirty-four separate papers which evince little unity of thought or mode of treatment, it is obviously impossible for a reviewer to give anything approaching a satisfactory account of the contents, still less can he give a criticism of them. One can only say that almost every conceivable aspect of the subject is dealt with, such as the definition of emotion (in several papers), methods of investigation (by Prof. Spearman), physiological aspects (including a paper on Emotions in Animals and Man, by Henri Piéron), pathological aspects, including papers by Janet and Adler; Feeling and Emotion in Children, by Stern and David Katz; and the Relation of Emotion to Æsthetics and Religion, including a paper by Herbert Langfeld. Even this list leaves out a number of great names in the psychological world, and undoubtedly the symposium serves a valuable purpose if only to show, as it does, the great diversity of views on the vexed question of emotions. Perhaps this cannot be better exemplified than by reference to the two views, first, that emotions do not prompt or further action, and, second, that "more can be accomplished under emotional stress than in its absence"—a quotation from the able paper by Dr. Aveling. It will be seen that the book is not one for the beginner in psychology, who would only experience confusion; but it would be valuable as a book of reference for the advanced student, or for his initiation into certain aspects of the detailed study of emotions. C.W.V.

Modern Psychology: Normal and Abnormal: by D. B. Leary, Ph.D. (Lippincott Co., London and Philadelphia. Pp. 441. 18s. net.)

Dr. Leary has produced a comprehensive and well-planned study of psychology from the standpoint of a physiological behaviourist. He deals, not only with general biological and physiological aspects of psychology, but with language, intelligence, mental deficiency, temperament, Freudian views, personality and society, belief, magic and religion, art and beauty, and the relation of psychology to philosophy.

Each chapter is followed by a considerable bibliography, in which, however, there are very serious omissions.

The book may well serve as a guide and introduction for the students to further study of the behaviourist and physiological interpretations of psychology. But the argument is frequently very thin; psychological assumptions are slipped into the physiological explanations unwittingly, and, at times, unjustifiably. The style, too, though usually very clear, is at times irritating.

Psychology and Education: by C. R. McRae. (Sydney: Whitcombe and Tombs, Ltd., 1929. Pp. 387.)

Mr. McRae, who lectures in education at Teachers' College, Sydney, has written an interesting little book which will probably satisfy the immediate need which he had in mind when he outlined his book. The student of educational psychology needs a text-book to read in order to allow periods at college to be devoted to experiment, discussion, and tutorial work, and not merely to attendance at lectures. The author has certainly produced a useful volume for this purpose, and a keen group of students will surely have much to say about some of the dogmatic statements of the writer. The book is divided into three sections, devoted to "The Motivation of Learning," 'The Psychology and the Pedagogy of Cognition," and "Individual Differences." There is little of originality in the book, which is well produced and published.

The Problem of Lay Analysis : by Sigmund Freud. (Brentano's, Ltd. Pp. 316. 10s. 6d.)

In the first and greater part of this book Freud discusses psycho-analysis from the point of view of the non-medical psycho-analyst. But he does more than that, and this part would constitute an introduction to Freud's general system of thought. In spite, however, of the fact that it is written in popular, almost conversational and, at times, dialogue form, I do not agree with the author of the introduction, Dr. S. Ferenczi, that it is the best book, even by Freud himself, to recommend to a beginner for the study of psycho-analysis. Such a beginner is asked to take far too much for granted.

It is worthy of emphasis that Freud is as much perturbed at the prospect of medical as he is of non-medical quacks in psycho-analysis. The second part of the book will be of more interest to students of Freud, for it is an autobiographical study, and as it extends to 130 pages, it enables him to give, though in brief form, a most interesting and valuable account of the development of his views.

An Experimental Study of the Mental Processes Involved in Judgment : by B. P. Stevanovic, Ph.D. (*British Journal of Psychology, Monograph Supplement,* No. XII.) (Cambridge University Press. Pp. 138. 10s.)

This is a very valuable and detailed enquiry, carried out in the Psychological Laboratory at King's College, London. Part of the enquiry confirms the results already reached by Dr. Aveling, and reported in "Consciousness of the Universal and the Individual." There is a full description of the interesting experiments carried out in the development of judgment upon irregular shapes and in the completion of sentences. The results are too lengthy for us to give here, but we may note, as one of the most interesting, that growth in knowledge of an individual picture may take place either by slow differentiation of characters or by the sudden emergence of its structure.

The Nature of Laughter : by J. C. Gregory. (Kegan Paul, Trench, Trubner and Co., Ltd. Pp. 214. 10s. 6d.)

We regret that by an oversight the review of this book has been delayed, but are glad to give it now a warm commendation. It is a comprehensive and most agreeably written essay, and if not profoundly subtle from a psychological point of view, it is lucid and extremely suggestive. Many views as to the true significance of laughter are discussed, and a theory of laughter as relief set forth, with particular discussions of such topics as laughter and pleasure, laughter and instinct, laughter and repression. On the development of laughter in young children the discussion seems to us incomplete, and at times definitely wrong, and the explanation of laughter at incongruity seems inadequate. As a whole, however, the work is undoubtedly a most readable book, and one rich in literary allusions.

Parents and the Pre-School Child : by William E. Blatz, M.B., Ph.D., and Helen McM. Bott, M.A. (J. M. Dent and Sons. Pp. 306. 6s.)

This is one of several books recently published in America which indicate the great developments there in the study of infancy. It includes an elementary treatment in parts of relevant psychology, and an exposition of some of Watson's experiments on children (the results of which are too uncritically accepted) and a great deal of useful suggestion and common-sense observation bearing upon the treatment of young children, in the home and elsewhere. The preface states that it is primarily intended for parent education groups.

Problems of Instinct and Intelligence : by Major R. W. G. Hingston. (London : Edward Arnold and Co., Ltd., 1928. Pp. 296. 10s. 6d.)

This interesting volume by such a well-known naturalist is full of examples of instinctive behaviour of varying orders of complexity, the whole being the result of long personal observation of insect and animal life in Oriental tropical jungles. Such an account cannot fail to be of value, even if one is not quite prepared to follow the author in his deductions as to the relations of instinct and intelligence.

Psychology from the Standpoint of a Behaviourist : by John B. Watson. (J. B. Lippincott Co. Pp. 458. 12s. 6d.)

This is a second edition of Dr. Watson's book. It provides nine additional pages on the general scope of psychology, a large new section on " Vision," by Professor H. M. Johnson, some new material in the chapter on " Glands," and a new section on the behaviourist view of thought. Though small in bulk, the additions add appreciably to the value of the work as an expression of the views of one of America's most thorough-going behaviourists.

The Senior High School Curriculum : by G. S. Counts. Supplementary Monograph, No. 29 (Published by the Department of Education of the University of Chicago. Pp. xii + 160. $1.00.)

The aim of the investigation was to discover the trends in curriculum practice by studying the programmes of schools in fifteen representative cities. The method adopted was to obtain information from the teachers by means of questionnaires and to supplement this by visits to the schools and discussion with the teachers.

Two different types of schools have been organized, that with the specialized vocational curriculum, and that with the comprehensive curriculum. According to the author, the specialized curriculum is becoming broader, and approaching that of the comprehensive type, but owing to the social prestige of the college preparatory course, the comprehensive school tends to be dominated by the old tradition. The selective principle allows the pupil to choose his course within wide or narrow limits according to the school, and a sense of inferiority associated with the newer subjects leads the pupil to attempt unsuitable courses.

The constants may be regarded as the core of the secondary curriculum, the average number of semester hours allotted to each in the fifteen cities is as follows : English, 488 ; physical education, 234 ; social science (including history), 178 ; mathematics, 90 ; natural science, 90 ; etc. The incidence of compulsion which these figures indicate has to be offset by the choice allowed in courses and subjects. Thus the percentage of time devoted to the subjects by the pupils is : English, 18.8 ; commercial subjects, 12.4 ; social science, 11.4 ; foreign languages, 11.1 ; mathematics, 11.0 ; natural science, 10.2 ; industrial arts, 7.5 ; physical education, 7.7 ; etc., in order of magnitude.

The author deals with the various subjects and comments on changes of method, content, and function that are either noticeable or desirable. Of English he writes : " The great need is for setting up of definite and socially defensible standards in the use of oral and written speech." The average amount of foreign language time devoted to each language is : Latin, 39.7 ; Spanish, 31.5 ; French, 26.5 ; German, 2.2 ; Greek, 0.1. Commenting on this distribution the author writes : " German, which before the Great War rivalled Latin . . . in popularity, is found in only seven cities. . . . For some time previous to the outbreak of the war the specious argument had been advanced and had received wide circulation that Spanish, because of the

growing trade relations with both Central and South America, possesses great commercial value. . . . . At the same time the commercial curriculum was expanding more rapidly than any other. . . . There was disseminated among high school pupils the notion that Spanish can be learned with little difficulty. . . . Nothing could show more clearly the unsubstantial, unscientific, emotional basis on which the present high-school curriculum rests. Subjects come and go at the behest of popular passion or artful reasoning." He notes that German is slowly coming back and that French is having difficulty in maintaining its position, also that Spanish increases in favour towards the west and south.

Of mathematics the outstanding aspect is its unpopularity ; it is studied largely because it is a constant, and it is the only subject which large numbers of teachers consider should be attempted by fewer pupils (Table LXV). Natural science " in recent years has experienced difficulty in maintaining the position which it has obtained. As organized and taught, this subject lacks the power to stimulate the minds of boys and girls. . . . The pupil is so bewildered by minutiæ and abstractions that he comes to regard science as some form of foreign language."

General science is rapidly taking the place of physiography in the first year of the high school course, while the following sentence contains all that can be said of geography, " a course in industrial geography is offered in Cleveland, a course in the geography of Europe in Joliet. . . ."

Of interest to the foreigner is the proportion of time devoted to the various branches of history and social science. The average percentage of social science time devoted to the subjects is : ancient history, 23.1 ; mediæval and modern, 10.0 ; modern history, 11.3 ; world history, 6.3 ; English history, 1.3 ; United States history, 17.2 ; civics, 16.0 ; vocations, 4.4 ; economics, 3.9 ; etc.

The book is furnished with a full index and should be of interest to the student of comparative education. E.J.G.B.

Proceedings of the Imperial Social Hygiene Congress (at the Caxton Hall, London, 1927. Organized by the British Social Hygiene Council). (Price 4s. 6d., post free, from the B.S.H.C., Carteret House, Carteret Street, London, S.W.1.)

The Proceedings of the Imperial Social Hygiene Congress give abundant evidence of the world-wide need of effort to improve social hygiene and to develop social conscience.

The Congress is organized by the British Social Hygiene Council, and the representatives in attendance show that in every part of the Empire strong organized efforts are being made to meet this need.

The stamping out of venereal diseases is the chief material aim of the Council and of the Congress, but so various are the avenues of approach employed—legislative measures, improved diagnosis and treatment, recreation and education—that there is limitless scope for work and boundless prospect of human advancement.

In every part of the Empire efforts are being made to eradicate venereal diseases, efforts varying much in scope and in rapidity of success according to the mentality and social conditions of the peoples concerned. Highly organized measures are employed to cope with conditions in the Navy and the Mercantile Marine, among which international arrangements for treatment and improved recreational facilities are noteworthy.

Everywhere the importance of education, especially of the young but also of adults, is stressed. Educationists will find much of interest in the problems presented in various parts of the Empire.

The importance of biology and physiology in the school curriculum seems to be accepted by all, although the efficiency and present value of such teaching appears to vary considerably.

Dr. W. K. Spencer (Board of Education), in his address to the Congress, outlines very fairly the position of biology and nature study in modern English education. The teaching of biology is now regarded as being of primary importance in the Training College course. Its aims are two-fold :

(1) To prepare a certain number of the students in training as future teachers of biology ;

(2) To develop in all future teachers a clear understanding of :
  (a) The mode of normal growth and development of the child ;
  (b) The causes of departure from the normal ;
  (c) The methods of remedying defects and abnormalities.

The science teaching is definitely linked with that of health, disease being regarded as something extraneous, avoidable, and generally curable if proper steps are taken. Definite sex instruction is very rarely included in the curriculum of schools, but there is an increasing number of teachers who have the requisite knowledge to give such instruction in the impersonal manner which can only be attained through scientific training. The British Social Hygiene Council is pressing for the introduction of such instruction, and already some tentative steps have been taken. Mr. Vischer, speaking of the teaching of social hygiene in native schools in Africa, regards science as the one door which will lead the European into the mind of the African.

In India the teaching of science and the training of character have been neglected. Here the purpose of education is purely to qualify for employment ; science is a difficult and expensive subject, and, therefore, not in favour with the student. Neither Indian teachers nor students realize the bearing of nature study upon life and conduct. Religious beliefs and social customs also play their parts in limiting the usefulness of the school in the training of character.

The enthusiasm of the workers, the wide range of their activities, from Zanzibar to New Zealand, from Alberta to Assam, will give considerable significance to the Congress. Not least interesting in this book is an Appendix containing the constructive policy of the Council in a memorandum addressed to the Imperial Education Conference. The breadth of the proposals contained therein promises great things for the future.

The Elements of Logic : by Robert Latta, M.A., D.Phil., LL.D., Emeritus Professor of Logic and Metaphysics in the University of Glasgow, and Alexander Macbeath, Professor of Logic and Metaphysics in the Queen's University, Belfast. (Macmillan and Co., Ltd. 6s.)

Text-books on logic are apt to fall into two distinct classes. They are either skeleton outlines of formal logic, awakened to a semblance of life by a display of felicitous and entertaining examples, or advanced philosophical treatises which depend for their understanding by the student on the unusual capacity for acquiring, *pari passu*, the elements of logic and of metaphysics. It is the great merit of this book that it constantly suggests the metaphysical affiliations which alone distinguish genuine logical problems from Chinese puzzles, while retaining in the more technical sections the clear exposition and abundant illustration of its more formal predecessors. This combination of qualities should make it peculiarly suitable for classes in logic which are composed partly of students who are treating it as an end in itself, and partly of intending philosophers.

In its general outlook it adheres closely to the traditional idealist position, but it eschews the spurious simplicity which shrinks from the discussion of controversial issues. In view of the circumstances of its composition (it was begun by Professor Latta " some years before the war "), it is natural that the critical arguments should be directed against Mill, Jevons, and Keynes, rather than against the logic of the new realists. The reassertion of the old position is, however, both subtle and vigorous, and Professor Macbeath's concluding sections on Induction and Hypothesis should do much to satisfy the recent concern with the practical methods of scientific research.

The technical detail is admirable in its lucidity and in the scope of its illustrations, the frequent appeal to detective fiction being particularly happy and topical. It is singularly free from barren abstractions; a's and b's, p's and q's, are translated consistently with the concrete terms for which they stand, and in an instructive section which criticizes by implication many of our more stereotyped expositions of formal logic, Professor Latta shows how undue reliance on general symbols may lead to positively false conclusions. Though the style and the method of exposition change somewhat when Professor Latta ends and Professor Macbeath begins, the continuity of thought is remarkable, and Professor Macbeath may be congratulated on his success in that most difficult of tasks—the writing of a perfect sequel.

Altogether, it is the most intelligently written introduction to logic which has appeared for some time, and should be strongly recommended both to teachers and students. A.B.G.

Stockbury: A Regional Study in N.E. Kent: by Christine Pugh and Geoffrey E. Hutchings, F.G.S. (Published by The Hill Farm Centre for Open-air Education, Stockbury, Kent. Pp. 72. 1s., post free 1s. 3d.)

This detailed study of a small region in N.E. Kent is obviously the result of keen observational field work, and shows how successfully geologist and biologist can combine to provide interesting material for further consideration by geographer and sociologist. It certainly fulfils its aim in setting forth " the general scope of open-air studies," and allowing for differences of " personality " in different regions, the general method of approach should prove valuable in other districts. Geographical belts are connected with geological outcrops; the former in their turn with types of township and village, while both are examined in relation to lines of communication from the earliest phases of human settlement. Of special interest is the working out of the connection between Anglo-Saxon settlement and present rural organization.

The natural history of the region is adequately dealt with, but unfortunately no climatic data are given. Perhaps some space might with advantage have been devoted to a more detailed study of the effect of the impact of growing industrial centres of the Medway estuary on the occupations and activities within the region surveyed.

For the school teacher the scheme is an ambitious one. It is probably beyond the scope of the elementary school, and in this connection the " Oxfordshire Experiment " (B. of Ed. Educational Pamphlet, No. 61) offers an interesting comparison. Even in secondary schools unification of such a scheme might prove difficult. But a survey along similar lines by a group of training college or university students, of varying interests, should offer a wide field for fruitful experiment.

The maps are very good, Plate IV being as fascinating as it is comprehensive. A parish boundary map would have been a welcome inclusion. A bibliography is given. The price is absurdly low, and all teachers of geography should possess a copy. E.F.

The Child-Centred School : by H. Rugg and A. Shumaker. (Harrap. Pp. 359. 8s. 6d.)

The authors have set themselves a three-fold task : to give a general account of current practices on the left wing of American education ; to expound the theory lying behind such practices ; and to attempt a critical evaluation and appreciation of both. Those sections of the book dealing with problems 1 and 3 are of most interest. The theory is not new ; it is, in fact, relatively well worn ; only in their chapters on the psychology of æsthetic creation does one feel that the authors are breaking new ground. But the list of pioneer and experimental schools, with details of their activities, is well worth having—one is particularly glad of " brass tacks," such as specimen time tables and programmes of work—and the critical chapters are valuable in that they put into reasoned form, and bring into relation with general theory, the views of the " plain man " on " fresh schools." Especially in their insistence on the need for intellectual as well as " motor " training for technique as well as " vision," for hard and clear thinking as well as enthusiasm, does one feel the authors have rendered a service. Their dictum, " It is intense effort that educates," might well be taken by the " child-centred " school as its motto.

The illustrations are lively and suggestive. The chapters on the particular arts might well be read by specialists. For those interested in America in particular there is a valuable incidental survey of educational developments in that country since 1850. (In American life generally the authors believe a long period of industrial and economic exploitation is about to be followed by one of " creative effort," and the change is already having its repercussion on education.) Finally, there is a full and useful biography of " progressive " educational literature, both European and American. M.P.

Experiments in Teachers' College Administration : by G. W. Frasier and others. (Warwick and York, Baltimore. Pp. 80.)

This account of attempts made in Colorado State Teachers' College to solve administrative problems has previously appeared as articles in *Educational Administration and Supervision*. It deals with the establishment of a department of educational research, work done in the supervision of college instruction ; the application of intelligence tests in selecting entrants, determining students' courses, forecasting results of examinations, etc. ; the " extension service " of the college ; student participation in government ; finance ; and co-operation with other institutions of higher education.

It is interesting to note an institution of the character of the Colorado State Teachers' College asking the question, " Why not supervise college instruction to the same degree that public (e.g., elementary) schools supervise classroom instruction," and appointing a special officer for the purpose. Amongst the benefits claimed are that " some good teachers on the verge of failure have been saved to the institution," whilst " some poor teachers have been dropped from our pay roll." The individual extension service of the college by means of correspondence work, and the group extension service via extra-mural classes, are of interest in view of our rural pupil teacher and uncertificated teacher problems. With regard to student participation in the management of college affairs it is concluded that co-operative government is to be preferred to any attempt at independent student government in the regulation and promotion of student affairs ; that student conduct is better controlled by the college officers than by students ; and that athletics should be under the control and guidance of representatives of the college administration. T.P.H.

Art Education in Elementary Schools : by Fredrik Vickström Nyquist, A.M. (Warwick and York, Baltimore. Pp. 160. $2.08.)

The five chapters of which this book consists are divided into two sections. In the first the author deals with the aims of elementary art education and its scope in the schools ; in the last three chapters he discusses the subject matter and its teaching under respective headings of Drawing, Design, and Construction, and Selection and Appreciation.

His attitude towards the aims of art education is typical of the new understanding and interest which the authorities are beginning to extend with regard to the value of art in general education. This first chapter recognizes it in a sensible and sympathetic manner. Not only does it acknowledge the value of drawing from the point of view of encouraging " realistic observation and record," but in the right approach to the imaginative side as possessing " one of the few, if not the only means of developing visual imagination in the elementary school curriculum." " Art education is the only subject in the curriculum which deals with visual experiences from the æsthetic point of view." In turning to his exposition of the scope of art education I must confess that although the aims are admirable the general amount of time allotted to art in the time table of the elementary school in England would not allow, unfortunately, for such a wide and far-reaching study. By this I do not means to pour cold water on schemes which would give every benefit on the cultural side, which is the true aim of education. The present inadequacy of training in art supplied to elementary school teachers would be one of the main obstacles to the adoption of these schemes, which call most distinctly for specialist teachers. The book is interesting and the discussions about methods of teaching contain helpful suggestions.

C.B.

The Hygiene of Instruction : by Lawrence A. Averill, Ph.D. (Harrap and Co. Pp. 386. 7s. 6d.)

That " the child is the father of the man " has now become a commonplace saying, yet advances in psychology have given a new orientation to its meaning. We are learning that it is the experiences of childhood in relation to the immediate social environment in which it lives and moves, that determines its outlook in after-life. Hence the age-long problems of education are assuming new forms, and making new demands upon the teacher. It is to aid the teacher in his approach to these demands that this book has been written. The author, therefore, begins with the attitude or " mind set " which each one of us assumes towards the everyday facts of life and experience, and thence leads up to a discussion of the goal to be kept in view in education. This forms a suitable basis for the consideration of the more immediately practical problems ; the school day, sequence of studies, fatigue, interest, the physical basis of health, adequate sleep, nutrition, and so on. The classification of pupils, the gifted, the mental deficient, and the " problem child " all come into consideration. To many readers the chapters on the " problem child " will prove the most interesting portion of the book, dealing as they do with the home and school maladjustments, which so often lead on to such tragic failures in adult life. Dr. Averill has given us a book of real merit with a breadth of outlook which is refreshing. The central problems of education do not depend upon country or climate, and though written primarily for American teachers, their English colleagues will find much in it that is helpful and stimulating. G.A.A.

Learning How to Study and Work Effectively : by William Frederick Book. (Ginn and Co. Pp. xviii+475. 8s. 6d.)

This book, written by the Head of the Department of Psychology and Philosophy in Indiana University, was primarily designed and written as a text-book for first year college classes in " Orientation," or " How to Study." His aim, stated in the preface, is to set forth facts in such a way that they shall be of direct practical assistance to all who desire to make themselves more efficient in study.

The first twenty-one chapters, covering 447 pages, deal with such topics as the conservation and restoration of energy ; the power of ideals to release energy ; the development and use of attention and will ; habit ; planning work ; making and working to a schedule ; learning to reason or solve new problems effectively ; how to apply oneself fully and continuously to one's work. Part V, which consists of the last two chapters, is given to a discussion of the dangers of pseudo-efficiency in study and work.

An over-conscientious reader who mastered and practised all the details (if that were possible) in Parts I to IV inclusive would certainly need the warnings given in Part V, e.g., that becoming a slave to any set of habits, or to standardized procedures, acquiring the habit of doing effective but mere conventional thinking, or becoming mastered by habitual activity of any sort, would mean that the most important door to human efficiency and progress, i.e., original and spontaneous activity, had been closed. On the other hand, a less conscientious reader is certain to find many valuable hints and suggestions for more effective work.

Ethical Problems : An Introduction to Ethics for Hospital Nurses and Social Workers : by Beatrice Edgell, D.Litt., Ph.D. (Methuen. Pp. ix+149. 5s.)

The usefulness of this book is not confined to nurses, though it is chiefly addressed to them, and has an appreciative preface by Miss Lloyd Still, the Matron of St. Thomas' Hospital. Teachers will find in it much that is helpful. The application of ethical and psychological principles to the special problems of a particular profession is a field of thought full of possibilities, and at present comparatively unworked. Many a one might be preserved from his " calling's share " if the dangers and opportunities which belong to it could be suggested to him as applications of general principles. The difficulties inherent in life in a community are also more easily avoided when the members of it are aware of the psychological and ethical principles most intimately involved. The light thrown upon the problems of community life is one of the most useful features of this book, and the passages on the conflict of duty with duty, and of sentiment with duty, are particularly suggestive. The last chapter deals with vocation, and includes studies in leadership and in types of temperament and character. A lecturer in education will find a great deal here as in other chapters that will stimulate his thought and illuminate his own special sphere of work. W.M.

The Relation of the Skull and Brain to Crime : by W. Norwood East, M.D., M.R.C.P. (Oliver and Boyd. Pp. 28. 6d.)

The text of a lecture delivered at Edinburgh University in November, 1928. The lecturer surveyed the progress of opinion about the relation of skull measurements and cerebral convolutions, etc., to the tendency and occurrence of crime. The researches of Gall and Spurzheim attracted attention, and, notwithstanding criticism, they gained recognition among prominent medical

and legal experts. Lauvergne, Lombroso, Galton, and others made observations which, while acceptable to very many, could not resist the scientific tests of Griffiths, Goring, etc., whose conclusions repudiated the idea of a physical criminal type such as Lombroso and his disciples suggested. Psychological investigation appears to be on the right lines to provide solutions as to the cause of crime. At the moment there is some disagreement among prominent psychologists. Dr. East and Dr. Cyril Burt's conception of temperamental deficiency as a cause of delinquency in young people affirms that psychological tests of intelligence have done much to reveal mental states, but temperament has yet to be more fully investigated. Psychology may not do what is expected of it any better than have phrenology and anthropometry in the past; the investigator must still be alive to the results yielded by research in every field, whether psychological, medical, or sociological.

A.P.B.

Sex and Repression in Savage Society: by Bronislaw Malinowski. (Kegan Paul, Trench, Trubner and Co., Ltd. Pp. 285. 10s. 6d.)

This book is wider than its title. It starts out from certain facts about the family relationships among the Trobriands, among whom Professor Malinowski lived for several years. The book proceeds to show how their matrilineal organization gives rise to complexes very different from those of patrilineal societies. Among the Trobriands the father was more intimately concerned with early infancy than is usual in western civilization, but was fortunate in being able to hand over the stricter discipline needed for older children to the mother's brother. With great ingenuity Professor Malinowski shows how there can be traced signs of the appropriate complex; and this, surely, so far from being a confirmation of the Œdipus complex, even in a disguised form, is more explicable as a mere result of discipline. The book is full of suggestion for students of the psychology of sex, as well as of the ordinary relations between various members of the same family. It is written with remarkable clarity, and with a charm of style which makes a subject which is complex in more senses than one, a delight to read. It is not too much to say that it is a brilliant contribution to the allied studies of psychology and sociology.

C.W.V.

The Games of Children: by Henry Bett, M.A. (Methuen and Co., Ltd. Pp. ix+131. 5s.)

The author of this book traces the origin of many of the games played by children all the world over. The reading is of absorbing interest both to grown-ups and to children. One can well imagine the added joy to children in knowing how, from the earliest known history of the world, their games have evolved to their present form.

Ancient customs of marriage to a member of another tribe which generally meant capture by force of the bride; old beliefs in fairies and evil spirits; the world-old propitiation of the powers of growth and fecundity, to induce the production of good crops for the season; the sacrifice of human life to ensure the safety of buildings and bridges to save them from floods and subsidence of the soil; all these and many more are dealt with, and it is shown how, by the imitation of the customs and usages of the grown-ups, the games of children have always been played.

The "Notes" refer the reader to a number of books, and who, after reading this book, will not want to learn still more of this interesting study of folk lore and legend and history of mankind?

Lip-reading for the Deafened Child : by A. Stowell, E. E. Samuelson, and A. Lehman. (Macmillan. Pp. viii + 186. 5s. 6d.)

This book is born of the combined experience of teachers whose service has been given to the training of deafened children. The education of a child who has had normal hearing and whose hearing has become impaired, from one or other of the various causes of deafness, must be continued by special means.

The book contains practical hints on teaching lip-reading to these deafened children and the exercises classified for older and younger children are based on the principles and practice of standard books on this subject. The arrangement of matter is good. To the child who is losing his hearing sounds are taught in the same order in which they diminish in auditory intensity, while hints are given to the teacher on how to make the exercises on these sounds interesting to the child who cannot hear them. Information, useful to parents and teachers of the deafened, as to the prevention of deafness, correction of speech defects, and vocational training, is given.

So little has been written on the training of deafened children that this book should be welcomed by all teachers interested in this work. I.B.L.

Schools of To-day : by Bolton King. (Dent and Sons. Pp. 112. 3s. 6d. net.)

In this small but valuable book Mr. Bolton King gives us the fruit of his twenty-four years' experience as Director of Education for Warwickshire. Its sub-title, " Present Problems in English Education," indicates its scope. It will certainly, as the author modestly hopes, " be of use to those who are not concerned in educational technique but who, as parents and voters, realize how vital to the nation is the well-being of the schools." The most important problems discussed are those emphasized by the Hadow Report : the school-leaving age and the development of post-primary schools. In view of the Board's recent step, it is interesting to read Mr. King's disproval of the argument (based on the excessive school population of the " peak " years, 1933 to 1936), against an early raising of the school age. Among other topics may be mentioned the " dual " system, so mischievous in its effects ; the truth being, as Mr. King wisely says, that " for children and teachers and parents, outside one or two areas, the denominational question does not exist." Readers will here find a brief but intelligible explanation of the finance of education. The book will be of real value to students in training, who will find in it not only information but sane counsels.

How Shall We Train the Teacher of Modern Languages ? : by E. H. A. Robson. (Heffer, Cambridge. Pp. xi + 176. 5s.)

Miss Robson's book is, as was to be expected from one of her wide experience, essentially practical. She discusses the chief problems with which a teacher of modern languages is faced, whether it be the controversial topic of the use of English, or the choice of text-books, in a clear and concise fashion, so that all interested in the subject, and particularly the beginner, will find here much that is valuable. She is no extremist. The methods that she advocates are such as have stood the test of the classroom. On more general school problems, too, she has sound advice to offer the young teacher. Not the least useful part of the book is the bibliography, with which each chapter is furnished and which forms a helpful means of orientation.

If Miss Robson, in answering the question of her title, deals perhaps more with what is than with what might be, she certainly gives a very comprehensive survey of what a student ought to learn during the period of training. E.W.T.

Organization of State Departments of Education : by H. E. Schrammel, Ph.D. (Bureau of Educational Research, Ohio State University, Columbus, Ohio. Pp. xii+171. $1.50.)

A review of the organization of State Boards of Education, 1890-1925, dealing with staffs, officials, salaries, terms, and duration of office, formation of boards, and the achievements of the States ; enrolments, expenditure calculated on various bases, and, finally, the author arrives at rough formulæ for the constitution of departments from which efficiency in working may be expected. Naturally, his suggestions are not advanced as unmodifiable measures but as means of cutting down wastage and securing efficiency with economy. Although comparison might be made between States in America and districts provided by local authorities in England, the conditions are widely different, and would stultify the comparison. Years ago Sir Graham Balfour and Mr. Jackson indicated what could be done ; the compilation of an up-to-date English work on the lines of Dr. Schrammel's monograph might attract some English student.

The Use and Interpretation of Educational Tests : by H. A. Greene and A. N. Jorgensen. (Longmans. Pp. xxii+389. 10s. 6d. net.)

The authors of this book have succeeded in giving a clearly written, well-balanced account of the principles, methods, and uses of measurement in education.

The chief topics are The Meaning of Educational Tests, Their Uses, Standard Tests, The Construction of Informal Tests, Summarizing and Interpreting Results, The Place of Tests in Diagnosis and Remedial Teaching, and Diagnostic and Remedial Techniques in Arithmetic, Language, and Reading.

This book deserves a place in every staff library, and should be read by teachers of all subjects who are unacquainted with recent developments in educational testing. The authors have realized that the results of well-devised tests afford practical guidance to teachers in arranging exercises to remedy and prevent the weaknesses of individual pupils.

A valuable appendix gives lists of tests in the various school subjects.

A.E.C.

Culture and Social Progress : by Joseph Kirk Folsom, M.A. (Longmans, Green and Co. Pp. ix+558. 12s. 6d.)

This volume in Longmans' " Social Science Series " presents a bird's-eye view of various lines of thought in the social sciences. After giving an account of the development of culture the author shows how the results of the human sciences bear on the practical problem of social betterment and outlines ethical principles which spring from man's nature and environment.

There is a refreshing absence of technical terms in this book, which succeeds in giving an interesting and stimulating analysis and interpretation of the facts of social life. The author's main thesis is that, profiting from the experience of the ages and in harmony with his fellows, man should be free to find a place in society suited to his nature instead of being moulded to fit a place.

An excellent bibliography is provided, also a series of questions on the various topics for discussion and reports. A.E.C.

A Guide to Literature for Character Training. Vol. I : Fairy Tale, Myth, and Legend : by E. D. Starbuck and F. K. Shuttleworth and others. (Macmillan, New York, 1928. Pp. xiii+389. 8s. 6d. net.)
This volume is the result of an attempt to produce, for the benefit of parents and teachers, a considered guide to the world's best fairy tales, animal stories, myths, and legends. It contains a graded book-list, where the stories are arranged in order of merit, a general bibliography of reference books, and ample indexes. A " situations' list " caters for those who are looking for stories for a particular purpose. There is danger in a book which makes so few demands as this on the judgment and initiative of the reader, and where the classification of stories according to " situations " and " attitudes " may encourage that didacticism which is inherent in the title. But it contains much useful information as regards good stories, and, wisely used, should be a valuable reference book.

La Pratique des Tests Mentaux : by O. Decroly and R. Buyse. (Bibliothèque de Psychologie de l'Enfant et de Pédagogie, Libraire Félix Alcan. Pp. xvi+402. Francs 60.)
A volume of about 400 pages in which the authors have brought together accounts of the principal types of tests from the early scales of Binet-Simon to the present day. Individual and collective tests are assigned separate sections of the book ; verbal, non-verbal, and performance tests are discussed in such a way as to present the whole work as a compendium of historical development, criticism, and procedure exceedingly useful to anyone able to read French. It is sufficiently illustrated, indexed, and provided with a good bibliography. A preface has been contributed by Professor Henri Pieron, of the Collège de France. This publication is one of the best of its kind that has yet appeared.

Some More Medical Views on Birth Control : edited by Norman Haire. (Cecil Palmer. Pp. 239. 7s. 6d.)
This is a collection of papers by eminent medical men who favour, in some form and for varying reasons, the adoption of methods of birth control. Dr. Haire makes a trenchant reply to the authors of an earlier book, " Medical Views on Birth Control." Other chapters are headed by such well-known names as Sir James Barr, Dr. F. E. A. Crew, Sir W. Arbuthnot Lane, and Dr. Hamblin Smith, whose thoughtful discussion of some psychological aspects of the question at issue is worthy of special note. The book is certainly a valuable contribution to the literature of this difficult but important problem.

The Value of Homogeneous Grouping : by T. L. Purdom. (Warwick and York (Inc.), Baltimore. Pp. 99. $2.08.)
In this University of Missouri Research Monograph the author describes briefly the methods used in his research, devotes considerable space to analyses of results, and concludes that pupils in homogeneous sections do not gain more than pupils in heterogeneous sections when the results are measured by standardized tests. Although the argument does not seem to be conclusive owing to the sketchy account of the methods of instruction, the book deserves to be read by those who are seriously concerned with the problems of school organization.

The Matter and Method of Modern Teaching : by Valentine Davis. (Cartwright and Rattray, Ltd. Pp. 384. 6s.)
Mr. Davis has put together a number of suggestions on the teaching of various subjects to pupils in primary and post-primary schools. The task of writing a really good and serviceable book dealing with the teaching of all the school

subjects is an ambitious one in which few, if any, writers could succeed ; and it cannot be said that Mr. Davis is one of those. A large part of the book consists of quotations, and there are extensive bibliographies. The latter are up-to-date and valuable.

The Phonetics of English : by Ida C. Ward. (Cambridge : W. Heffer and Sons, Ltd., 1929. Pp. xi+176. 5s. net.)

Miss Ward, whose contributions to phonetic theory and practice are well known to teachers, has now written this little book on English phonetics particularly for teachers. It is an extremely well-written book, clear and explicit, with a very practical bias throughout. It will undoubtedly find its way into most Training Colleges.

The Health of the Mind : by J. R. Rees. (London : Faber and Faber, Ltd., 1929. Pp. xiv+266. 6s. net.)

The Deputy Director of the Tavistock Square Clinic has succeeded in writing a simple, clear, concise book on " The Health of the Mind " for intelligent laymen, and to help enlighten parents on many of the difficulties attendant on the healthy development of the child's emotional attitude to life. Parents and teachers will find much of value in this little volume.

Nature Study for Beginners : by D. Patton. (Oxford : Clarendon Press. 1928. Pp. ix+141. 2s. 6d.)

An interesting, well-illustrated, and well-produced little book on Nature Study should be useful in schools. This volume certainly satisfies these requirements, and, in addition, it contains instructions for many simple experimental investigations which the young student may be expected to carry out for himself.

Testing Intelligence and Achievement : by A. J. Levine and L. Marks. (Macmillan Company. Pp. viii+399. 8s. 6d.)

This book contains accounts of various methods used in testing intelligence and achievement together with concise statements of the principles of experimental investigation which are involved. The aim of the authors has been to arrange their material so as to facilitate memorization.

Two-Minute Bible Readings : compiled by A.W.Y. and E.Y. (Student Christian Movement. Fourth Edition, containing readings from the Apocrypha. Pp. 223. 3s.)

We can highly commend this selection of passages from the Old and New Testament and the Apocrypha. They seem to us to be chosen with very great care and discernment, and to be suitable for private use as well as for the purpose for which they were collected, namely, for use in opening school and for prayers in homes and other institutions.

The Gospel according to St. Mark : The Clarendon Bible. (Oxford : 1929. 4s. 6d.)

The Prophets of Israel : by A. W. F. Blunt. (Oxford : Clarendon Press, 1929. 3s. 6d.)

The Oxford University Press is worthily upholding its prestige and dignity by the issue of the Clarendon Bible, of which the latest volume to appear is the Gospel according to St. Mark. The text is that of the Revised Version, and a scholarly introduction and commentary are from the pen of Rev. A. W. F. Blunt, whose name is a sufficient guarantee that no pains have been spared in making the commentary accurate and valuable.

He also has written the second volume mentioned, "The Prophets of Israel," really designed for pupils and teachers in secondary schools. But it should also be of real service to that wider circle of readers who are genuinely seekers after knowledge in that much debated subject of religious education.

Parents, teachers, and senior scholars will appreciate these two valuable additions to their library of religious knowledge.

NOTICES OF FOREIGN JOURNALS.

Das Werdende Zeitalter. October, 1929.

This number contains papers from the August Conference at Helsingör (=Elsinore) in Denmark. Dr. Elizabeth Rotten writes on the adaptation of the curriculum to the change in the times. The fundamental motto is now : "Vom Kind aus"—from the child outwards, beginning with the child, not with the stuff (stoff) or subject matter. Stoff there must be in quantity, but it needs selection according to the child's growth in power, and remembering that life is always and everywhere interconnected. Harold Rugg invokes modern psychology for working out the construction of the curriculum. Kurt Lewin's paper is on Gestalt-theorie and Gesamt-person. The child as a personal whole must not be forgotten amid the multiplicity of treatments. A. M. Ayer reports on teacher-training at Milwaukee, Wisconsin. In their third year the girl students abandon lectures and use the children as a living, moving laboratory. Each student has two tutors, one a class teacher, the other a faculty lecturer. George Bertier writes on the new school in relation to official syllabuses and examinations. An international committee for the study of examination methods has been appointed, reporter Rektor Leibersberger, Bergstr. 25, Heilbronn.

Zeitschrift für Pädagogische Psychologie. (Leipzig : Verlag Quelle und Meyer.)

September, 1929.

K. Graucob : Peculiarities of form in thought and speech during adolescence. Verbally formed thought comes less often to expression with young people than adults, least often with girls. Juvenile thinking is like a chain of mountains, in which only the highest summits gleam in the sunshine, all else is in haze. The emotional has the greater influence on the course of thought. In discussion they are deductive. Long consecutive logical chains of thought are impossible. The acceptable mode of thought is disconnected aphorism ; expression is not carefully modelled, but is an impulsive discharge.

October, 1929.

The Prussian report on Sittlichkeitsvergehen has already been noticed in the FORUM OF EDUCATION. It has roused various reactions in Germany and is regarded by some as a cleansing thunderstorm, by others as a signpost to the physical and spiritual perdition of individuals. Misgivings are marked among ecclesiastics. As long as education stopped short before puberty these troublesome questions did not arise. What seems to be happening is a tendency for sexual education to be taken over by the school and the teacher instead of the church and the cleric. This October number of the Zeitschrift is devoted to allied topics and general principles for the treatment of sexual delinquencies of scholars. There is no hope in punishment. Education is impossible without mutual confidence. The class teacher rather than the visiting expert psychologist will find the necessary way. The teacher must maintain the right to silence in guarding information. Scholastic condemnation assumes acquaintance with the fundamental facts of healthy and unhealthy juvenile life. Confidential co-operation with school doctor and others may be a duty. There is no sound ground for punishing a scholar for long past misdeeds followed by an interval free from complaint. H.R.

PUBLICATIONS ALSO RECEIVED.

ENGLISH.

Lectures on the English Poets : by William Hazlitt. (Oxford Univ. Press. Pp. xii+330. 3s. 6d.)

Burns : Poetry and Prose : edited by R. Dewer. (Oxford : Clarendon Press. Pp. xx+203. 3s. 6d.)

The Beacon Study Readers (Teachers' Manual for First Lessons and Book I) : edited by Frank Roscoe. (Ginn and Co. Pp. 104. 2s.)

Pen Portraits and Character Sketches, and Travellers' Tales and Sketches : edited by A. E. M. Bayliss. (Harrap. Pp. 224 each. 2s. each.)

The Sad Shepherd : by Ben Jonson. (Cambridge Univ. Press. Pp. vi+50 1s. 3d.)

Studies in English : Part I, Language : by William Robb. (Longmans, Green and Co., Pp. 124. 2s. 6d.)

Nature in Literature : by Edmund Blunden. (The Hogarth Press. Pp. 156. 3s. 6d.)

Narrative Verse : by H. A. Treble and G. H. Vallins. (University of London Press. Pp. 261. 3s.)

New Exercises in Essay Writing : by Guy Boas. (Longmans, Green and Co., Ltd. Pp. 129. 2s. 6d.)

FOREIGN LANGUAGES.

Active French Readers, Book I : by G. M. Bennett and E. Peyre. (Univ. of London Press. Pp. 123. 1s. 9d.)

Knock, ou de Triomphe de la Médecine : by Jules Romains. (Longmans. Pp. 91. 2s. 6d.)

Déput Amoureux : by J. B. Poquelin Molière. (Cambridge Univ. Press. Pp. vi+61. 2s.)

La Fleur Merveilleuse : by Miguel Zamacoïes. (Longmans. Pp. 128. 2s. 6d.)

A Progressive Course of Latin Unseens : by H. A. Henderson and C. W. Baty. (Oxford Univ. Press. Pp. vii+192. 3s. 6d.)

A Latin Book for Beginners : by M. C. Gardner. (Oxford Univ. Press. Pp. 224. 3s.)

Readings from Vergil, Æneid I-III : edited by Alexander Duthie. (Harrap. Pp. 93. 1s. 6d.)

Advanced Latin Tests : by J. Mathewson Milne. (Harrap. Pp. 79. 1s.)

Mariana : Historia de Espano. Selected Readings : edited by R. S. Conroy. (Longmans. Pp. iv+87. 2s.)

The Active French Course, Fourth Year. : by F. A. Hedgcock. (Univ. of London Press. Pp. xvi+232. 3s. 6d.)

A French Course for Schools, Part I : by H. F. Collins. (Macmillan. Pp. xi+170. 2s.)

French Construction for Continuous Prose : by A. C. Rylance. (Oxford Univ. Press. Pp. xix+124. 3s. 6d.)

Modern German Composition : by J. Rivers and O. Vollenweider. (Longmans. Pp. xii+67. 2s. 6d.)

Test Examinations in German : by A. S. Macpherson. (Methuen. Pp. 72. 1s. 6d.)

Cinco Articulos : by Mariano José de Larra. (Longmans, Green and Co., Pp. 90. 2s.)

Stories from Spanish History : by Nicolas Conzalez Ruiz. (Longmans, Green and Co., Pp. 96. 2s.)

Modern Tales from France : by F. C. Roe. (Longmans, Green and Co., Pp. 160. 2s. 6d.)

Le Jeu de L'Amour et de la Mort : by Romain Rolland. (Longmans. Green and Co., Pp. 94. 2s. 6d.)
La Peau du Lion : by Charles de Bernard. (Oxford Clarendon Press Pp. 95. 1s. 6d.)

HISTORY.

British History : by Ramsay Muir. (George Philip and Son, Ltd. Pp. xx+816. 7s. 6d.)
The Modern World : by F. S. Marvin. (Longmans. Pp. ix+320. 3s. 6d.)
England's Story, Parts 1 and 2 : by D. M. Stuart. (Harrap. Pp. 278 and 289. 3s. each.)
A Social and Industrial History of England : by F. W. Tickner. (Arnold. Pp. xii+723. 7s. 6d.)
A Handbook for History Teachers : by D. Dymond. (Methuen and Co., Ltd. Pp. 247. 3s. 6d.)
England in Modern Times : by R. M. Rayner. (Longmans, Green and Co., Pp. 420. 5s.)
Europe Throughout the Ages : by Norman H. Baynes and Eileen Power. (Routledge and Sons, Ltd. Pp. 78. 6d.)

ECONOMICS.

Buyers and Makers : by D. M. Vaughan. (Longmans, Green and Co. Pp. 126.)

GEOGRAPHY.

The World : a General Geography : by L. Dudley Stamp. (Longmans. Pp. xi+676 and ten coloured maps. 5s.)
A New Regional Geography of the World : by Marion I. Newbigin. (Christophers. Pp. xxi+432. 5s.)
People of Other Lands : by E. D. Laborde. (Cambridge Univ. Press. Pp. 87. 1s. 6d.)
People of Far-off Lands : by E. D. Laborde. (Cambridge Univ. Press. Pp. 113. 1s. 9d.)
A Geographical Grammar : by C. C. Carter. (Christophers. Pp. xv+119. 3s. 6d.)
The Home of Man, Part I : The British Isles : by W. C. Brown and P. H. Johnson. (Harrap. Pp. 329. 3s. 6d.)
An Historical Geography of Europe, 800-1789 : by J. M. Thompson. (Oxford : Clarendon Press. Pp. 152. 5s.)
The Changing World : by A. Wilmore. (G. Bell and Sons. Pp. 63. 1s.)

PHYSICS.

Experimental Mechanics, a School Certificate Course : by V. T. Saunders. (Longmans. Pp. 151. 2s. 6d.)
The Elements of Mechanics : by W. D. Hills. (Univ. of London Press. Pp. viii+140. 2s. 9d.)
Mechanics and Applied Mathematics, Parts I and II bound up together: by W. D. Hills. (Univ. of London Press. Pp. xiv+264 and xi+248. 8s. 6d.)

CHEMISTRY.

A School Chemistry : by Arthur Brooks. (Univ. of London Press. Pp. xiv+312. 4s. 6d.)
An Introduction to Modern Organic Chemistry : by L. A. Coles. (Longmans. Pp. xv+452. 7s. 6d.)

BOTANY.

Practical Botany : by A. H. Reginald Buller. (Longmans. Pp. viii+275. 6s.)

Test Examinations in Botany : by M. A. Johnstone. (Methuen and Co., Ltd. Pp. 52. 1s. 3d.)

MATHEMATICS.

Cambridge Intermediate Mathematics : by H. J. Larcombe. (Cambridge Univ. Press.) Algebra, Part II ; Without Answers (Pp. viii+247. 2s. 6d.) With Answers (Pp. viii+280. 2s. 9d.) Arithmetic, Part II ; Without Answers (Pp. viii+207. 2s. 6d.) With Answers (Pp. viii+230. 2s. 9d.)

Four-Place Tables, with Forced Decimals : by F. S. Carey and S. F. Grace. (Longmans. Pp. 39. 1s.)

New Elementary Arithmetics : by J. H. Webster. (Cambridge Univ. Press.) Book I (Pp. 48. 8d.) Book II (Pp. 48. 8d.). Book III (Pp. 48. 8d.). Book IV (Pp. 64. 10d.). Book V (Pp. 72. 1s.). Book VI (Pp. 80. 1s.). Book VII (Pp. 80. 1s.).

The Essentials of Arithmetic : by Robert Walker. (Harrap. Pp. 378. 6s.)

Fundamental Arithmetic Cards, Standard I, Sets " A " and " B " : by Dr. P. B. Ballard. (Univ. of London Press. 24 cards each. 1s. 3d. per set.)

Fundamental Arithmetic for Secondary Schools, with Answers : by P. B. Ballard. (Univ. of London Press. Pp. 380. 5s. 6d.)

Examples in Applied Mathematics : by P. O. Street. (Methuen. Pp. 160. 4s.)

MISCELLANEOUS.

Stories for Little People : by Mabel Marlowe. (Harrap. Pp. 256. 3s. 6d.)

Oliver Untwisted : by M. A. Payne. (Arnold. Pp. vii+120. 3s. 6d.)

The Contract of Sale of Goods : by R. A. Eastwood. (Longmans. Pp. viii+120. 3s. 6d.)

Routledge Introductions to Modern Knowledge. (Routledge. Pp. 74-80. 6d. each.)

No. 2, **From Monkey to Man :** by L. D. Dudley Buxton. No. 5, **Europe Throughout the Ages :** by David C. Somervell. No. 6, **The English :** by H. W. Nevinson. No. 7, **Music for All :** by Cyril Winn. No. 8, **What Darwin Really Said :** by Julian Huxley. No. 10, **The Restless Earth :** by Prof. H. L. Hawkins. No. 11, **The " Will to Work " :** by G. H. Miles. No. 14, **The Women of To-day :** by the Hon. Mrs. Dighton Pollock. No. 15, **Practical Economics :** by Harold E. Batson.

The Little One in Between : by Marion St. John Webb. (Harrap. Pp. 60. 3s. 6d.)

Leatherwork for Boys and Girls : by N. A. Poole. (Univ. of London Press. Pp. 64. 1s. 6d.)

An Introduction to the History of Architecture : by H. Barrett Carpenter and Joseph Knight. (Longmans. Pp. viii+292. 6s. 6d.)

The " Previous " (Fourteenth Series), 1925-1928. (Bowes and Bowes. Pp. 197. 5s.)

How to Succeed in College : by William F. Book. (Baltimore. Pp. 192. $1.60.)

A Woman of India : by G. S. Dutt. (The Hogarth Press. Pp. 144. 4s. 6d.)

Keeping Mentally Fit : A Guide to Everyday Psychology : by J. Jastrow. (Rider and Co. Pp. 223. 7s. 6d.)